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INDEX TO CONTENTS

	Page
Intestinal Stasis. By V. C. Tisdal, M. D., Elk City, Oklahoma	1
Varicose Veins, Their Results and Treatments. By R. M. Howard, M. D., Oklahoma City	3
Abdominal Drainage From an Anatomical Standpoint. By C. von Wedel, Jr., M. D., F. A. C. S., Oklahoma City	7
Rachiocentesis. By Lea Ridly, A. M., M. D., Oklahoma City	10
Perforation in Typhoid. By LeRoy Long, M. D., Oklahoma City	12
A Study of Teratology, With Presentation of Specimen. By W. W. Wells, M. D., Oklahoma City	16
Laryngeal Diphtheria. By H. M. Williams, M. D., Wellston, Okla.	20
Gonorrheal Ophthalmia. By R. L. Mitchell, M. D., Vinita, Okla.	23
A Condensed Report of the American Proctologic Society. By J. M. Cooper, M. D., Oklahoma City	25
Proceedings of St. Anthony's Clinical Society.—Laboratory Diagnostic Methods in Poliomyelitis, with Report of Three Cases. By O. J. Walker, B. S., M. D., Oklahoma City	27
Editorial: A State Hospital Proposed for the University	30
Current Medical Literature	32
Personal and General News	34
Correspondence and Miscellaneous	36

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INTESTINAL STASIS.

V. C. TISDAL, M. D., Elk City, Oklahoma

The work of W. A. Lane of London has opened a distinctly new line on investigation with regard to a large class of maladies associated with impaired function of some part of the alimentary canal and of organs closely related thereto. General auto-intoxication, chronic constipation, visceroptosis, floating kidney, gall-stones, duodenal ulcer, mucous colitis, pericolitis, chronic appendicitis and other conditions traceable to perverted functions of these parts of the organism, must now be studied from a different point of view from that which has been brought to bear in the past. Lane has pressed forward in the effort to discover first causes and in doing so has demonstrated clearly that in health maintenance a question of prime importance is body drainage. The non-absorption of poisons and the elimination of whatever poisonous matter may be produced within the alimentary canal before there has been inaugurated a vicious cycle of events which may be the forerunner of disastrous end results. Attention has thus been focused more directly upon previously obscure phenomena of intestinal stasis, and a plausible explanation has been offered of the causes underlying the evolution of these phenomena.

Lane has demonstrated to his own satisfaction and to that of a large number of surgeons in Europe and America that intestinal stasis, as he calls the slowing of the drainage current, is the result of the abnormal fixation of certain portions of the canal with the dropping of the tube on either side of a fixed point, thus producing a kink. The kinking of the intestine prevents the free passage of its contents, causing a puddling in the dependent portions, a daming back and infection of the material and a general slowing of the drainage. His definition of this state of affairs, this chronic intestinal stasis, is such an abnormal delay in the passage of the intestinal contents through a portion or portions of the gastro-intestinal tract as results in the absorption of a greater quantity of toxin or poisonous material than can be treated effectually by the organs whose functions it is to convert them into products as innocuous as possible to the tissue of the body. This re-absorption and auto-intoxication leads to a general lowering of the resistance of the body and to the concomitant increase in susceptibility to various diseases. This increased susceptibility, in his opinion, finds an expression in various conditions to which he has applied the term "end results". His view, it will be noted, is thus the direct antithesis of that of many other observers who consider such diseases as causative factors in the production of intestinal stasis. The end results are cancer of the stomach, intestines, biliary ducts or pancreas, visceral tuberculosis, rheumatoid arthritis, etc.

The explanation offered by Lane for the condition which leads to the chronic intestinal stasis is purely an evolutionary one, as opposed to the hereditary con-

genital and toxic theories held by others, who have made a study of intestinal obstruction in general. According to Lane, the toxic symptoms are secondary. Others hold them to be causative or primary of mechanical changes which produce stasis.

The ptosis of the abdominal viscera, broadly speaking, is the result of the assumption by man of the upright position. In early life ptosis is the result of an abdominal distention of the intestines due to too frequent feeding or upon the continued use of unsuitable diet. In later years it is brought about by the erect posture which the man assumes during waking hours. The resulting pressure and strain may produce distinct changes which may take the form of evolutionary bands. The bands are practically without blood supply and are not to be confounded with inflammatory adhesions which are abundantly supplied with blood as a rule. These evolutionary bands exist primarily for the advantage of the individual, the purpose being to support the intestines and prevent them from dropping downward. They do not develop with equal strength throughout, unfortunately, and as a consequence the bowel is held up firmly in some points and allowed to sag in others. The results being the angulation, or kink, at the point of support.

The points of predilection for the formation of these evolutionary bands, as demonstrated by Lane and his followers, are: (1) the pylorus, (2) duodeno-jejunal junction, (3) different points along the terminal coil of the ileum, (4) the appendix, (5) the hepatic flexure, (6) the splenic flexure, (7) sigmoid flexure, (8) the rectum.

The symptoms produced by this condition vary in different individuals with a degree of obstruction with the concomitant end manifestations. They may be briefly summed up as follows: (1) headache, severe and frequent; (2) nausea, followed by retching and vomiting; (3) anorexia almost constantly present; (4) loss of weight; (5) cold extremities; (6) mental apathy; (7) constipation; (8) foul taste in mouth often accompanied by foul breath, decayed teeth and furred tongue; (9) abdominal distention relieved by eructation, the passing of flatus, or an action of the bowels; (10) abdominal tenderness over the areas of fixation; (11) skin staining; (12) breast changes, assimilating chronic mastitis in the early stages and cystic degeneration in the later stages; (13) general muscular pain and more or less marked stiffness of joints.

The diagnosis of intestinal stasis is made by clinical symptoms plus careful radiographic study, the degree of obstruction and the location of the obstructing kink being determined by the rapidity of the passage through the intestines of bismuth.

The treatment depends upon the degree of stasis. In atonic or asthenic individuals, where there is a general loss of muscular tone and nervous energy with only slight degree of ptosis of the hollow viscera, complete cures may be effected by means of abdominal supports, tonics, building up of the nutrition and rest until the nerves and muscles have gained their normal tone. Liquid paraffin given in one-half to one ounce doses, two or three times a day on an empty stomach, has been found particularly helpful in this class of cases.

It is believed by the devotees of this subject that in the vast majority of instances, intelligent management by the internists will prevent chronic intestinal stasis and the milder degree promptly recognized and carefully treated by the measures outlined may be cured without recourse to surgical measures. Once allowed to progress to the more marked degrees of stasis with definite kinking and with clearly characteristic symptoms, surgery must be brought into requisition. The extent of operative interference must be contingent upon conditions found upon laparotomy. In some cases the cutting of the evolutionary bands and the restoration of the angulated or misplaced hollow viscera or other organs to their normal position will effect the return of the normal function and the disappearance of the symptoms. In other cases, particularly where the bands are formed with adhesions between different portions of the gut with possible involvement of other organs, such as ovary, gall-bladder, liver, etc., it is necessary to resort to ileocolostomy or colostomy.

VARICOSE VEINS, THEIR RESULTS AND TREATMENT.*

R. M. HOWARD, M. D., Oklahoma City

General considerations:

Varicose veins have, since the early days of surgery, been a fruitful field for failures in our efforts to apply a curative treatment. Various operations have been devised for their cure, some effective, but many failures because they were not based on accurate knowledge of the normal anatomy and physiology. Ligation operations and divisions of the vein trunks have been the basis for most of them, but how far applicable a given operation may be is dependent upon the exact circulatory change present in the given case.

The recognition of this abnormal circulatory change requires a consideration of the normal venous return from the lower extremity. First, we must recognize that the venous blood which is to travel from the feet to the head, must rise some three and a half or four feet when the individual is in the erect posture. The veins which are to carry this flow are furnished with valves which divide them into a series of chambers. The valves are so arranged that they allow the blood to pass only towards the heart, each chamber then can only deliver its contents into the next one above. The force behind this is the weak capillary pressure and the movement of the leg muscles, aided by the emptying of the vena-cava, brought about by variations of pressure in the thorax. The great abdominal veins have no valves, which permits of a column of blood in these vessels only supported by the valves in the veins of the legs, a column which is feebly drawn forward and one that offers considerable weight against which the blood in the veins of the legs must rise, a column too, which is subjected to a considerable change in the intra-abdominal pressure. To meet this strain, the veins of the leg are arranged into two sets, the deep lying among the muscles and beneath the fascia well supported, and the superficial, lying in the subcutaneous tissue and supported only by the skin and superficial fascia. The two communicate by perforating veins in which the valves are set so that normally the blood can only flow from the superficial into the deep; a safety device which takes care of any temporary stasis. The surface veins are further divided into two systems, the greater or internal saphenous, and the lesser, or external saphenous. The great saphenous vein takes care of the return flow from the front and inner side of the foot and leg, passes upward and empties into the femoral vein at the saphenous opening. The small or external saphenous vein drains the back and outside of the foot and leg and empties in the popliteal space into the popliteal vein.

The principal physiologic features then of the venous circulation in the leg are as follows; the veins pass the blood upward through a series of chambers separated by bicuspid valves which permit only of an upward flow. This flow is favored by movement of the leg muscles, capillary pressure and changes in intra-thoracic pressure; the walls of the veins must support a column of blood whose weight is measured by the distance to the heart above, and inasmuch as the abdominal veins are valveless, the pressure upon the upper valves or upon the vessel wall if the valve becomes incompetent, is enormous, and is increased by the intra-abdominal tension. The deep veins of the leg have a strong muscular support while the surface veins derive small support from the superficial fat or skin; a system of vessels perforating the deep fascia communicates between them and owing to the arrangement of its valves, lightens to some extent the work of the latter.

A varicose vein in the lower extremity is merely a valveless vein, or more properly, a vein whose valves are incompetent. Taking into consideration this fact, the circumstances under which these changes are brought about and the changes that must necessarily ensue, and explanation of the various form of varices and a basis of treatment can be arrived at.

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*Read in Surgical Section, Oklahoma State Medical Association, May 10, 1916.

The most usual cause of these changes is hard, heavy work that requires a long continued standing on the feet and heavy lifting which greatly increases the intra-abdominal tension. Whether the valves become broken, or useless, through vein stretching is immaterial. A lesser cause is pressure from pregnancy, abdominal tumors and congenital weakness of vein walls, a condition often met in various structures of the body. These factors tend to produce the frequent large surface varicosities.

A smaller group arises from phlebitis, which often follows puerperal infections, post-operative complications, typhoid fever and various infectious diseases. These can usually be distinguished from the other type inasmuch as the changes which bring them about are widely different.

The varix, dependent on its cause, assumes one of two forms, i. e., that due to over-strain and stretching of the vessels and the other to phlebitis. In the first case the valves become useless, the vessel walls stretch until their nutrition is impaired, muscle changes to scar tissue and degenerative conditions rapidly arise. The veins become torturous, saculated and thin-walled. As these changes are gradual, collateral circulation is established, the perforating veins aid and stasis is slow to develop, the changes for some time being confined to the larger trunks. The ulcers which occur are in direct relation to the vessels involved (often riding upon the veins). Their occurrence seems to be due to the chronic irritation consequent to the stasis of the impure blood in the vessel beneath as is shown by the pigmentation of the skin which often precedes their actual development. A frequent contributing cause is undoubtedly trauma, and the extent of the ulcer is dependent on the amount of infection present.

The perforating vessels, as a rule, do not share in the varicosity of the larger vessels, continuing for years to carry the stagnant blood from the surface veins into the deep system. When they do break down, however, the surface circulation is more embarrassed as the blood from the deep vessels can flow into the dilated surface veins and as a result, ulcers are more prone to occur and in areas independent of the veins themselves.

In the second and less common variety which develop from phlebitis, the valves are suddenly crippled, sometimes by the organization of the thrombus and by thickening of the vein walls and narrowing of the lumen, the circulation becoming just as ineffectual as through a large dilated channel. The great saphenous vein is hard, small, straight and thick-walled, the perforating veins are almost always incompetent and the disturbance of circulation in the surface veins is so great that ulcers appear early and are wide-spread, the whole leg often appearing very much swollen within a short time. The foot, however, rarely becomes involved in this process as it is well supported by the shoe and its circulation seems to be well cared for by the deep vessels.

For the purpose of treatment, we divide varicose veins into two classes, (1) Surface varix; (2) Surface varix complicated by varicosity of the perforating veins. In the first class come the majority of cases of gradual dilatation. In the second class advanced cases of gradual dilatation with incompetent perforating vessels and all of those cases coming from phlebitis.

There are certain clinical tests which when applied, demonstrate to us the extent of the damage. The first, devised by Trendelenburg, bears his name and shows the incompetency of the valves in the larger vessels. It is carried out as follows: the leg is raised above the level of the heart until the veins are empty, then rapidly lowered, when the blood can be seen or felt to flow back into the leg, rapidly distending the vessel. By such means, valvular incompetency of the surface veins as opposed to hyper-trophy, or distension of normal vessels, can be diagnosed. But still more information can be determined from this procedure by a slight modification which we term the "constriction test." Suppose it had already been determined that the surface veins allow a back flow, the leg is now raised and the veins emptied of blood. If, before it is lowered, a constriction only firm enough to com-

press the surface veins is made above the upper thigh, blood cannot flow from above into the superficial vein, and until they are filled by the natural circulation, they remain empty. On releasing the constriction, they are filled with a palpable shock. But this procedure tells even more, suppose the perforating veins share the varicosity of the surface vessels, the blood in the deep vessels will then be able, as normally it cannot do, to leak into the surface vessels and in applying the constriction test it will be found that in spite of the prevention of back flow down the superficial veins, these fill rapidly below the constriction. That is to say blood is finding its way out from the unobstructed deep veins through the incompetent perforating vessels to the surface. In varicosity of the surface veins alone, filling below the constriction takes place in three quarters of a minute or more, and even then these vessels may not be very tense, for the perforating veins are continually carrying off the excess of blood. If, on the other hand, the perforating veins are incompetent, the surface vessels will fill below the constriction, possibly in ten to thirty seconds according to the importance of the leak. These tests ignore the possibility of varix of the deep venous system, a very rare condition, if indeed, it is ever fully developed.

The diagnosis of surface varix is demonstrated by a positive Trendelenburg test and a negative constriction test and is never difficult except in the border line cases in which the superficial vessels fill slightly more rapidly than normal in the constriction test, and second, when there is a dense area of scar tissue as a result of a long standing ulcer of the lower leg. Under these circumstances, the diagnosis can be established only at operation. Simple surgical measures may be employed to cure surface varix, ligating the internal saphenous vein near its origin or removing a segment of it, often suffices. These procedures should only be used in instances of varicosity of the greater or lesser saphenous veins, when the perforating veins are proven competent. Inasmuch as collateral circulation may be established, and you may get a recurrence of the condition, it is thought best unless there are contra-indications, to do the radical excision. This consists of the removal of the greater part of the great saphenous vein and the lesser, if it be involved by some form of subcutaneous dissection. This is most often done by the use of the Mayo stripper, removing the vein to below the knee, then by long, straight incisions, turn back flaps of the skin and fat down to the deep fascia, removing the vein from the inside of the flap. The cure of the ulcer depends upon the thoroughness of the dissection. It is often advisable, however, to remove the thick, impenetrable base of scar tissue in order to more surely get a permanent healing, otherwise the poorly nourished tissue may harbor a leaking, perforating vessel not disclosed by the test and we may never get a permanent healing. If this is deemed best, it is often necessary to cover the defect with Thiersch grafts to more promptly get sound healing. Careful asepsis must be preserved as we are dealing with tissues of low vitality. The wounds are perhaps best closed loosely with subcutaneous catgut sutures, using no stitches that pass through the skin.

In the case of simple varix, complicated by varicosity of the perforating veins, the varicose vessels may be numerous and prominent or few and almost invisible. In the second instance, the patient's discomfort may be greater than the degree of varicosity warrants. Ulcers, particularly in those whose circumstances prevent them from nursing their ailments, are common. The constriction test shows that the vessels fill rapidly below the constriction by way of the perforating channels. The most difficult to classify are those with marked scar tissue formations and those that have great obesity, also those that result from phlebitis. The tests in these cases are difficult to interpret and one must often infer the diagnosis by the absence or presence of cyanosis in the lower leg during the performance of the test. In the treatment of these complicated conditions, the selection of the surgical procedure to be applied is important. In addition to the dissection of the main trunks, we must carefully remove many smaller vessels and carefully dissect the perforating vessels, for if these be left, and often we find them directly beneath the ulcer, they will continue to remain a source of venous stasis. It is frequently necessary, too, to remove large areas of scar tissue and ulcers, making at times a

rather formidable operation. In some instances we find the whole leg edematous and a mass of ulcers and in these cases the spiral incision down to the deep fascia may be applicable. Usually, however, by numerous incisions, sometimes by repeated sittings, we can finally effect a cure even though most of the superficial vessels are destroyed in the process and the limb remains edematous for a time.

Varix of the lesser saphenous veins may be present in both types, either alone or associated with varix of the greater veins. Bearing in mind the location of the vessel and using the usual tests, the condition is easily diagnosed. We should not forget that abnormalities may be present in both systems, and that if found, they must be dealt with. Unusual cases will be met that require careful study and not all will fall under the classification here referred to. Operation on such will require a careful consideration of the collateral circulation and the physical status of the patient.

All patients with varicose veins should be kept in bed several days before operation. It is not necessary, however, to wait for a healing of the ulcers, they will heal much more rapidly after operation. When the work is completed the leg should be firmly bound from toe to hip and it is probably best to apply a splint to the ankle and the knee. At the end of two weeks the healing should be complete and the patient allowed to be up. A supporting bandage should be worn for several weeks.

The treatment of varicose veins and their complications has been sadly neglected by the profession. There are many individuals who suffer for years or are actually prevented from carrying on their work who could be cured by a simple operation. Not long since, I had a man come into the hospital for treatment who had not been able to assume the upright position for months because of extensive varicose veins and ulcers of the leg. This was a case of simple surface varix that was easily cured, the man returning home in six weeks completely restored to health and able to earn a livelihood. Not all of our cases give such satisfactory results, but most are cured and the others greatly relieved after operation.

In writing this paper, I have drawn freely from the current literature and standard works on surgery as well as from my own experience with cases I have recently operated on. Most of my cases have been of the classical type and to review them here would only add unnecessarily to the time and give you no points not already covered in this paper.

Discussion

Dr. Curt von Wedel, Oklahoma City, Okla.: I was very interested in Dr. Howard's paper. It was a most excellent paper, the best I have ever heard. It has been my good fortune within the last two or three days to have a case of varicoses of both the perforating and superficial veins. Dr. Howard mentioned some important facts that should always be borne in mind—first, that the usual cause of failure in varicose veins is because we do not recognize the perforating condition. It is a very simple procedure to cure simple varicoses, but when the deep perforating veins are varicosed, the old Shrader operation was often followed by a condition, if anything, worse than before the operation, because the communication with the perforating veins still existed, and the circulation above was cut off. This, as you can see, only increased the varicose condition.

As a rule it is difficult to find these perforating veins. This morning I was fortunate enough to very easily locate the perforating vein. The constriction test showed that the vein would fill in about forty seconds above the knee, and below the knee they would fill in ten seconds—meaning that above the knee there was no varicosity of the perforating veins, while there was below the knee. Upon operation, a very large communicating vein was found.

Dr. Howard mentioned in his paper the rarity of varicose veins of the foot. Of course that is true, especially among people that wear shoes, but often we find this condition among people who wear ill fitting shoes which do not give support.

The chief point I think that Dr. Howard expressed which must be remembered, is that we must know whether there is a communication with the perforating veins, and if so, find it. Otherwise, the cure will not result. I think the best procedure to take in these cases where there is a varicosity in the perforating vein, is to make an incision down to the deep fascia. Tie the perforating vein below the deep fascia. Then dissect back a flap containing the vein. Remove the vein and fat from the flap and replace the flap. Use very few sutures. As a rule, the circulation in the flap will remain unimpaired. Occasionally we may be compelled to graft.

Dr. Howard (closing): Mr. Chairman, I have nothing more particularly to add, except to emphasize the points that Dr. von Wedel brought out. We must remember to take care of these perforating vessels. There will be a small number that will give us trouble, but unless we have classified properly the case we are dealing with, and then care for these perforating channels, we are incompetent and we will get more failures than we should in doing this work.

ABDOMINAL DRAINAGE FROM AN ANATOMICAL STANDPOINT.*

C. VON WEDEL, JR., M. D., F. A. C. S., Oklahoma City

Within the last ten years, several notable papers on the mechanics of abdominal drainage have been written—chief among which are those of Clark, Fowler, Yates, Coffey and Curtis.

R. C. Coffey, in a most admirable paper published in the March *Journal* of the American Medical Association for 1907, shows clearly that the most effective means of draining a cavity, especially in the accumulation of large amounts of fluid, is by means of gravity. Yates has shown by experimentation that any form of drain is isolated in the free peritoneal cavity in the course of a very few hours.

Having in mind Coffey's masterly article, and desiring to explain the uncertainties of drainage, I experimented in the Anatomical Department of the University of Oklahoma with several bodies. Coffey correctly contended that an angle of fifty-one degrees was necessary to overcome the dam formed by the psoas muscle which divides the flanks from the pelvis. After removing the liver, spleen, small intestines, and transverse colon, I filled the upper right flank with fluid, allowing the body a prone position. In this position, with an elevation of ten degrees to overcome somewhat the psoas dam, it required a lateral angle of considerably over thirty degrees to spill fluid from the right flank over the spinal division into the left flank. With small amounts of fluid in the flank, it is almost impossible for this fluid to gravitate into the opposite flank unless the subject be turned squarely on its side. Consequently, it can readily be seen that in order to efficiently drain the flank by purely postural means, it is necessary to elevate the body to sixty degrees, and rotate at least thirty degrees toward the side we wish to drain. This degree of rotation and angulation makes a very difficult position for the patient to rest in, even with the most improved of beds. In order to overcome this forced postural drainage, it was found that a low flank drain with a rotation of thirty or forty degrees, and an elevation of from fifteen to twenty degrees, would completely empty either flank. The most effective site for placing this drain is about one inch above and squarely external to the colon. Drainage internal to the colon will invariably cause infection in the cellular tissue around the kidney.

A flank drain is easy to place and rapid in emptying the flank, especially if care is taken to place it at the most dependent point. This point is midway on a line drawn between the anterior superior spine and the ribs. This procedure is far easier, and anatomically quite as dependent as the more difficult method of Bidwell, who places his drain through the loin into the sub-phrenic spaces. In passing, I would mention this rectal drainage of the pelvis, advocated by Curtis and Bidwell, but to condemn it.

*Read before the Surgical Section, Oklahoma State Medical Association, May 10, 1916.

In considering the proper place in the abdominal wall through which our drain should go, we must consider first the basic principles which were laid down by Coffey—namely: that the drain should be placed externally to a line drawn from the symphysis to the tip of the shoulder. This line runs through the deepest portion of the abdominal cavities, and generally speaking, is external to the small intestines.

In the drainage of the right iliac fossa, drainage either through or underneath the rectus muscle should be avioded. Drainage through the rectus muscle is very liable by pressure or extension to involve the deep epigastric artery with its very dangerous sequellae of secondary hemorrhage. Personally, I have had this experience in two cases, one of which was very nearly fatal. Drainage underneath the retracted rectus is likewise bad, as the rectus is apt to compress the drain, preventing the evacuation of the fluid. One should not place a drain too close to the anterior superior spine as at this point, about one-half inch internally, lie the hypogastric and ilioinguinal nerves. Pressure on these nerves by the drain, or their destruction by the extension of the infection, will cause atrophy of the arch fibers of the internal oblique and conjoined tendons. This, I believe, is an explanation of the reason for so many cases of right inguinal hernia following extensive drainage through the MacBurney incision.

If the pelvis is to be drained through the abdominal route, the drain should be placed squarely through the linea alba. If by chance the rectus sheath should be opened, we should at once close it, as many cases of deep infection of the wall and troublesome healings can be avoided by shutting off this avenue for the spread of our infection. In the same way, care should be taken that the peritoneum be sewed to the wall, so as to prevent an infection in the space of Retzius. These precautions should be taken immediately upon opening the abdomen, and before any extensive pelvic procedure is undertaken. By this means we avoid to a great extent the extensive destruction coincident with abdominal pelvic drainage, and liability to post-operative hernia.

In the drainage of accumulations of large amounts of fluid in the right hypochondrium, we have to deal with a simple process, provided the fluid is located in one flank. It sometimes happens, when our patient is very restless and tosses from one side to the other, that the pus is spilled over the spinal division into the opposite flank. As noted earlier, it is best to drain with a low flank stab external to the colon. Great care should be exercised to avoid the drain pressing upon the colon.

In dealing with retro-caecal and other retro-peritoneal accumulations, one should make a direct stab wound puncture, draining at the most dependent point. This is especially so with retro-caecal conditions, as promptness and efficiency in drainage decreases the chances for subphrenic complications.

It is not within the scope of this paper to take up peritoneal drainage in detail, but only to mention some of the salient and oft unthought of anatomical considerations with which we have to deal. One must of course deal differently with the many hundred possible localizations of pus within the abdominal cavity. Each in itself presents separate anatomical and technical difficulties.

Discussion

Dr. Fred S. Clinton, Tulsa: Mr. Chairman, like the essayist, I think the best discussion next to his paper of which I have any personal knowledge at this time is an article presented by R. C. Coffey of Portland. I have read that several times with considerable interest, and I think the one most practical thing to us who do considerable emergency work would be the stab drain for retro-caecal and peritoneal accumulations. I think that one point, if we did not learn anything else in the matter of drainage, would be worth many trips to this Association. I think the paper is concise and complete and comprehensive. I thank you.

Dr. George D. McLean, Oklahoma City: Of course Dr. von Wedel's paper

brought out the proper methods of drainage and my assumption is that this drainage is accomplished with the patients on their backs. I do not know who else, but somebody else found the method of draining by turning the patient immediately on his abdomen. Out of a good number of cases operated in emergency conditions, not a single one that we did not get improvement and a recession of the abdominal symptoms. I think I saw about twenty cases operated while in England and these men put an ordinary stab drain and used pieces of rubber finger to drain through, and the patients were turned immediately on the abdomen, putting the right side a little lower than the other, and the patients got along much better than those who were placed on the other side.

Dr. W. G. Lemmon, Tulsa: There are a few points in Dr. von Wedel's paper I want to speak of. Dr. von Wedel, in speaking of drainage, spoke as if posture and gravity are the only essentials in drainage. It is a fact that some patients will drain in two or three days and close up; whereas the abdomen will drain for some weeks, showing that the gravity is not the same for all of these cases.

Dr. von Wedel (closing): I am very glad that Dr. McLean and Dr. Lemmon and Dr. Clinton discussed the paper. Relative to the abdomen drain—lying the patient on the abdomen; the paper was not gotten up with the intention of pointing specifically to the drainage of all abdominal conditions. Unless we deviate the fluid from the highest part from underneath the diaphram, death occurs before an effect of drainage can take place. Drainage must take place within the first few hours.

Relative to this case of pelvic and abdominal drainage, of course, if we could keep in a glass tube and if the peritoneum would not oscillate within a very few hours; viz: if we did not empty the right flank immediately, we are apt to spill into the left flank, consequently, the postural drainage is to empty immediately the accumulations of large amounts of fluid and not allow the fluid to empty back into the left flank.

I have confined my paper only to the considerations of the abdominal drainage.

INTESTINAL PARASITES.

E. J. Van Liere, Madison, Wis. (*Journal A. M. A.*, Nov. 4, 1916), has examined the stools of twenty students in the University of Wisconsin for intestinal parasites. There is no doubt but that the Oriental immigrants are a public danger in this way. An inspection in San Francisco by Glover showed that of 1,002 Chinamen examined, the majority had intestinal parasites, and of 1,484 Japanese, a somewhat less percentage were infected. These were largely of the laboring class, while the subjects at the University of Wisconsin were undoubtedly of a much higher class, and less likely to be infected. The feces of twenty male foreign students attending the University of Wisconsin were examined and ten (50 per cent.) gave positive results. The infections were as follows, the figures referring to the number of the patient: (1) Hookworm and *Trichocephalus dispar;* (2) *Hymenolepis nana;* (3) *Schistosoma japonica;* (4) *Ascaris lumbricoides;* (5, 6, 7, 8, 9, 10) *Trichocephalus dispar.* The infected individuals in the several instances showed disorders connected with the presence of the parasites. The details of the examination and conditions of the subjects examined indicate that seventy per cent of the twenty students showed symptoms that might be due to parasitic worms and requiring medical attention. The examination shows that there is danger of infection from the average foreign student. Other persons doubtless carry parasites at times, but the percentage of infection among foreigners, and particularly Orientals, is very large.

RACHIOCENTESIS.

LEA RIELY, A. M., M. D., Oklahoma City

Rachiocentesis, lumbar, or thecal puncture, is of comparative recent origin. Quincke first drew attention to his investigations of it in an article entitled "Lumbalpunction" in the Berlin Klinicik in Wochenschrift, 1891. In 1892 he published a work on "Die Technik der Lumbalpunction."

Its idea has been made possible and harmless since our conception of aseptic conditions, until now very few diseases but what need it in a very thorough examination, and in the treatment of certain troubles this procedure has marked an epoch in medicine, because of the brilliancy of its results.

The operation of lumbar puncture may be performed with the patient sitting up or lying down on his side, with his knees and chin approximated. In children I generally use the first method with nurse holding them over the shoulder. In adults I practically always use the latter method, always seeing that they are firmly held to prevent turning and breaking off the needle. The puncture may be made while the patient is in the sitting position, particularly if the fluid is hard to obtain. Spinal anaesthesia while patient sitting up.

The place of puncture is the space between the vertebral spines next below a line made by connecting up the highest point of the iliac crest of each side, i. e., between fourth and fifth lumbar vertebrae, so chosen because (1) it is way below the termination of spinal cord, which is on a level with the first lumbar vertebrae; (2) this space is the largest of all; (3) presence of transverse septa and possible adherence of arachnoid membrane with the posterior surface of the cord from the cauda up into the cervical region; (4) some claim the cellular and bacterial elements gravitate to the lowest portion.

This procedure can be carried on with a general anaesthetic, a local anaesthetic, or none at all, as it is not accompanied by much pain. The puncture may be made in the midline, or one half inch to the side midway between the two spines selected as guides, and passes forward with an upward tendency until you feel the resistance of the ligamentum subflavum, or the almost unavoidable one of striking a lamina. In the former event you can feel the sudden loss of resistance and the needle is in; in the latter event you steer your needle at another angle when you feel the crepitus of the bone. The last resistance is as it pierces the dura.

The normal cerebro-spinal fluid flows out of the needle about twelve drops to the minute; it is clear and limpid, with a specific gravity of 1.006 or 1.008 alkaline and contains a trace of serum globulin and of albumose, and a substance which reduces Fehling's solution. Microscopically, a few large endothelial cells and an occasional lymphocyte 4-12 per c. m. m.

Hemorrhage arising from spinal puncture may be epidural or subdural. If pure blood flows out through the needle, the source of the hemorrhage is epidural. If blood tinged cerebro-spinal fluid is drawn, the source is subdural. (Quincke). Fluids showing globulin are said to be the result of inflammation of the meninges and we have never seen occasion to doubt it. Indeed, it is the most important of chemical tests, because it separates fluids due to meningism from those due to true meningeal infection. (DuBois and Neal).

By meningism is meant that condition in which meningeal symptoms arise in the course of some disease, the cerebro-spinal fluid being increased in amount but normal in character, it is an internal hydrocephalus. A condition of meningeal irritation due to toxines of infection outside of the nervous system without organisms or active inflammation within the meninges.

The cerebro-spinal fluid is a secretion of the cubical cells of the choroidal plexuses of the lateral ventricles and of the perivascular lymph spaces. Normally the fluid has free passage from the lateral ventricles to the third ventricle, then through the Aqueduct of Sylvius to the fourth ventricle, and from there is distri-

buted through foramina into the subarachnoid space and from this reservoir over the cerebrum, the cerebellum, and downward into the spinal arachnoid. The whole normal quantity of the cerebro-spinal fluid may be secreted in three or four hours.

The symptoms of any form of meningitis are due to the toxines of the germ infection plus increased cerebro-spinal pressure. If this pressure is sufficient to cause coma, repeated spinal puncture will relieve it, and such drainage is theoretically indicated. Of course, in spite of relief of such pressure, patient may die of toxaemia. (*Journal A. M. A.*, Dec. 25, 1915).

I recently had a case of typhoid with exaggerated reflexas, McEwen's sign, mental stupor, difficult hearing, Kernig's and Brudzinki's sign, propulsive vomiting, dilated pupils, etc., which on relieving the spinal pressure, by withdrawing 60 c. c. of fluid, the symptoms subsided and patient began to improve in a most remarkable manner. I have seen wildly delirious pneumonic and typhoid patients who took several to hold in bed, become docile and easy to manage on relieving the intraspinal pressure. I know of no better way of treating delirium tremens than by removing the intraspinous pressure. Such a procedure will calm down your patient and procure your much desired rest, which almost toxic doses of opiates and sedatives have failed to produce.

Meyers thinks that tubercular meningitis is not so rapidly fatal now, on account of lumbar puncture being more frequently done, thus preventing early deaths from cerebral pressure. He finds lumbar puncture prevents convulsions, which became rare in the clinical history of the disease so treated. He thinks it not only relieves pressure, but eliminates a certain amount of toxin. The fluid in these cases was never really turbid and was generally clear, the cell count varied from 24 to 960 per c. m. m. with an average of 198. The cerebro-spinal cell count seems to vary with the leucocytic count of the blood. The first part of the spinal fluid withdrawn at each puncture has a different cellular content from the last withdrawn, the first giving the greater number of cells.

One of the most brillant results of modern medicine is the universal results of Flexner's serum in epidemic meningitis. It has done for this disease what antitoxin has done for diphtheria. Even the repeated withdrawal of spinal fluid before the advent of serum ameliorated the nervous symptoms and frequently saved life, and even after the germs are no longer to be found and serum no longer used, the removal of spinal fluid is necessary during convalescence of a great number of cases. The early lumbar puncture helps you to make an early diagnosis and is the only way to make a sure diagnosis. The first c. c. of fluid is the most abundant with germs and should be the one to examine microscopically.

Cerebro-spinal syphilis can be diagnosed before the clinical symptoms are at all accurate by the puncture and examining the fluid for an increased lymphocytosis. The positive Wasserman reaction to the spinal fluid with increased cell count when blood reaction is negative bespeaks accuracy in diagnosis. To say nothing of the intraspinous treatment of spinal lues which is in its infancy. Syphilitic headaches are relieved by reducing intraspinous pressure. I relieved convulsions of eight hours duration in a syphilitic by merely withdrawing 65 c. c. of spinal fluid, which showed a positive Wasserman and increased cell count.

Flexner says lumbar puncture provides the one clinical method at present known for clearing up the diagnosis of atypical cases of poliomyelitis or for determining the nature of the typical affection prior to the appearance of paralysis.

Purves Stewart says that in the diagnosis of hemiplegia, whether due to thrombosis or apoplectic hemorrhage, the bloody or stained yellow fluid in the latter and clear fluid in the former.

Since the treatment is so diametrically opposite, it is well to differentiate.

Fractures of the skull, especially the cranial base, give a uniformly red fluid with hemolysis of the cells and in the event of infection your red color is accompanied by an increased palymorph. count.

Several observers have reported the clearing up of coma, convulsions and headaches within a few hours after the withdrawal of more or less fluid in what had heretofore been an irremediable state of uraemia from acute or chronic nephritis, such as you find in uraemia and eclampsia. This experience suggests at once the conclusion that headaches, coma and convulsion may not be caused entirely by uraemic poisoning of brain centers, but may be largely due to sudden increase of intra-cerebral pressure, a part of general edema. (Smith).

Shonback says that lumbar puncture seems to have only a briefly transient, if any, injurious action on the healthy, but the consequences may be disastrous in pathological conditions. There seems to be no absolute contraindications, but it is safer not to apply lumbar puncture in case of hemorrhage in the skull or vertebral canal or intracranial tumors, especially those in the posterior cranial fossa. Aspiration and ambulent lumbar puncture are vigorously denounced. The main dangers are hemorrhage from vacuum action and obstruction to communication between the various cavities.

The precautionary measures that should be enforced in case of intracranial tumors or similar processes are twenty-four hour preliminary bed rest, puncture with patient lying on his side, the head low, one or two days bed rest afterwards, and the head lower for the first twelve hours, avoiding any alcohol or excitement afterwards.

PERFORATION IN TYPHOID*

LeROY LONG, M. D., Oklahoma City

About 9 o'clock on the night of October 24, 1913, after an illness due to typhoid fever for ten days, Robert T., white, 27, complained of a severe pain in the abdomen accompanied by a sensation of chilliness. He was given 3j doses of camphorated tincture of opium. He had two or three doses without relief, and then, through a misunderstanding on the part of the attendants, two or three doses of aspirin were administered, but the patient was extremely uncomfortable all night.

At 9 a. m. on October 25th, he had a subnormal temperature, shallow breathing, an anxious expression, a moist, cool skin, and still complained of pain. It was thought that the aspirin might have had something to do with the subnormal temperature, but the significant thing in the general picture he then presented was the undoubted fact that *he was decidedly worse than he was the day before, and that this change in his condition had begun suddenly.* However, notwithstanding the presence of the symptoms I have enumerated, there was hesitancy in concluding that the patient had a perforation, chiefly on account of the short period of illness.

About 4 o'clock in the afternoon the nurse (a trained nurse had been placed in charge of the patient that day) reported the pulse faster (126) and not of good quality; the abdomen rigid; the temperature rising (then 102); that the patient still complained of pain and looked very bad. When seen a few minutes later his condition was as described by the nurse, except that his pulse had increased in rapidity, it being then 132. It seemed pretty clear that he had a perforation, and an immediate operation was advised. At this time he was given a hypodermic of 1-4 morphine.

There was some delay on account of the patient being unable to make up his mind to consent, but he was finally in the hospital at 8:15, and at 8:40 he was taken to operating room.

In order to economize time the abdomen was prepared while the anesthetic (ether) was being given. A free rectus incision was made, and through it greatly distended coils of small intestine immediately escaped. With but little difficulty a perforation was located in the ileum, it being situated on the antimesenteric border about ten inches from the ileo-cecal junction. It was perfectly round, a little

*Read before the Section on General Medicine, Oklahoma State Medical Ass'n, May 10, 1916.

smaller than an ordinary lead pencil, the edges greatly thickened and indurated, it having the appearance of having been punched out with a harness maker's tool. There was some lymph clinging to the margins and floating in the fluids about the lesion, but *there were no adhesions as are usually seen in connection with pyogenic inflammation.*

The perforation was closed by a purse-string suture, the distended intestines replaced with some difficulty, three rubber drainage tubes placed in the abdomen, and the wound quickly closed with through and through silk worm gut sutures, it being considered that time was the essence of the requirements in such a late operation after the perforation was closed. The patient was taken to the operating room at 8:40 and was returned to his bed at 9:15. Probably about twenty minutes was consumed in the actual work of the operation after the anesthetic was given.

The patient was put to bed in Fowlers position, half strength nomal saline solution was given by proctoclysis—for the first twenty-four hours a pint every two or three hours, then less often for next two days. The after-history, so far as the general condition of the patient was concerned, was entirely satisfactory. The pulse improved in character, not going above 100 after first two days, and dropped to the normal rate at the end of one week. There was a post-operative rise in temperature to 101 3-5, after which there was a lower afternoon temperature each succeeding day, with a distinct tendency to deffervescence, which was complete on November 10th, about sixteen days after the operation. As expected, the suture line became infected from the drainage, but it gave no trouble except locally. As expected, too, healing was followed by an incisional hernia which the patient still has, but which is not giving him trouble. He left the hospital on November 22nd, and was down town within a week. He is now, and has been ever since his recovery from his typhoid, entirely well.

In this connection I wish to call your attention to several important points, in the hope of encouraging the rendering of prompt and radical service—the only kind that will do any good—to patients who may have the misfortune to fall into this class in which only the direst consequences can take place under a palliative procedure.

1. The possibility of perforation early in typhoid. In this case the man had been sick only ten days. The time is pretty clearly fixed for the reason that there was not the usual delay in making a diagnosis, he developing the disease during his wife's convalescence from it, and the natural conclusion being that his disease was typhoid; and again for the reason that rose spots had just appeared. Cases are reported as occurring during the first week. They are not common, it is true, but the possibility should be borne in mind.

2. *The sudden development of a distinct change for the worse in the case of a patient suffering of typhoid.* In my judgment, this is an extremely important matter to consider in trying to arrive at a correct conclusion. In the early case, as in the case I have reported—the case in which the patient's mind is clear, permitting him to give a reliable and intelligent recital of the subjective symptoms, there is a history of sudden abdominal pain, usually accompanied by chilliness—*and this pain does not abate.* Objectively, we find in connection with this history stiffening of the abdominal muscles, frequent, shallow respirations, sudden increase in the pulse rate. This syndrome should, in my judgment, justify immediate operation.

When the patient has been sick for a long time; when he already has abdominal distention; in the patient whose mind is not clear, the proper interpretation of the condition may be particularly difficult. But even in these cases, if a careful analysis of the symptoms is made, paying attention to all the details, the true condition should not be often overlooked. The first significant thing that the physician will notice is that *the patient has become decidedly worse, and that this change in his condition has begun suddenly.* This is, to my mind, a point of superlative importance. If, in connection with this history of having become suddenly worse, the respirations are faster and shallower, the pulse increased in frequency and there are evidences

of restlessness and collapse, a diagnosis of perforation should be made, and, if the patient is not moribund, an immediate operation should be advised. It is understood, of course, that hemorrhage is another dangerous complication of typhoid, and it is assumed that proper steps are to be taken to exclude its existence—and, in the average case, it is usually not difficult to do it.

3. The blood count is not a reliable guide. Usually, even after perforation in typhoid, the white cells are not increased to such an extent as to be at all conclusive in connection with the question of perforation. It has been suggested that in typhoid a white count be made as frequently as the temperature is taken in the hope that if perforation occurs it might be indicated by a steady and uniform increase in numbers. In the suspicious case seen soon after suspicious symptoms have appeared, it might be well to make the count every hour. However, it would seem that, unfortunately, the blood count in this condition does not give very reliable information.

4. The obliteration of the normal liver dullness on account of the increased abdominal distention has been dwelt upon by certain authors, but in practice it, too, seems to be a sign without much importance. In the early case there may not be much distention; in the case developing late in the course of typhoid the liver dullness may have been obliterated by the general distention before the occurrence of the perforation. It would seem fair, then, to conclude that this sign should be given only a slight relative value.

5. In the average case the operation should be rapidly done without any reference to the possibility of the development of an incisional hernia subsequent to the operation. We are operating upon a patient who has a grave surgical emergency engrafted upon a grave general infection, and our whole procedure should be based upon what we conceive to be necessary to give the patient the best opportunity to *live* over the present emergency.

6. The operation should be done as early as possible. In the case I have reported it was late. While the result may show that we should not despair, even in the late case, it would seem far better to do the operation within the first twelve hours after perforation.

7. The records show that much of the moratlity from typhoid fever is due to unrecognized perforation. It occurs in about three per cent of the cases—I do not mean of the cases that die, but I mean that about three persons out of every hundred who have typhoid will have a perforation. It is difficult to definitely arrive at the mortality of typhoid, but it is probably somewhere between six per cent and twelve per cent. If, therefore, three per cent of patients have perforation, it may be seen what a frightful element perforation is in the mortality—anywhere from one-fourth to one-half the patients who die, die of perforation. If we remember in this connection that the accident occurs three times as often in the male as in the female, and that most of the cases are in young adults, we have another clue that may help us to come to a timely and life-saving decision. One-fourth to one-half of our typhoid mortality has been due to perforation—and how many times has the diagnosis been made promptly? How many times has the only procedure that offers hope—prompt operation—been provided for?

Discussion

Dr. C. S. Bobo, Norman: I am very glad to have heard Dr. Long's paper. I think it is one of the most timely medico-surgical papers I have ever heard. I am sure we are all misled in regard to the importance of the early diagnosis of perforation in typhoid fever. I think Dr. Long's percentage of the cases of death occurring from too late diagnosis is placed at a very conservative base, because it is out of the general rule to have typhoid fever cases die unless there is a perforation. A great many more cases die from perforation than from the general toxemia of the disease.

I call to mind now a case on which I was called in consultation in an adjoining county, a very prominent man. The night before he had had a very severe stab-

bing pain in his abdomen, his pulse was up and his abdomen was becoming distended. I suggested an operation but he refused, and the attending physician did not think the operation could avail anything, and I think that today that man would be alive if the operation could have been performed.

Dr. A. K. West, Oklahoma City: A very important contribution, and it impresses me that both physicians and surgeons ought to be particularly impressed with an operation of this kind. We operate on appendicitis, and we feel we have saved a life. We operate in a great many cases and save lives, but it only occasionally occurs in certain instances, this being one, that when we operate we know we have saved a life. The patient is already dead to all intents for there is no hope. Therefore, when they live we know we have saved a life by operation. The time element is very important. It should be done quickly. Get in quick, get out quick when the diagnosis is made, and that should always be done early and give the patient the only hope he has to recover.

Dr. Anderson: I do not question the idea of operation in cases of typhoid fever, but I simply want to make a report of a case I had last year. A man about fifty years of age had been sick with typhoid fever about two weeks. There was practically no question about his having typhoid. Two children of his followed him with typhoid. This man, about two weeks after he had taken sick, along in the after part of the night, developed very severe abdominal pain. I went out to see him and gave a hypodermic of morphine that relieved him some, and I think it was about four hours later that they called me back again. The pain had increased. At that time there was considerable rigidity of the muscles of the abdomen, the abdomen was beginning to distend and the man was vomiting every fifteen or twenty minutes, there was no question in my mind about a perforation. I told the family there was probably no question but what the patient would die. This went on about two or three days, the distension increased and I do not think I ever saw a gaseous distension greater than in that man, but what I want to say is, that the man finally recovered.

Dr. F. B. Stobaugh, Mannsville: I fully enjoyed the paper. It expressed the truth in a great measure. I want to say that perforation, in my mind, is responsible for 80 per cent of the fatalities we have in typhoid. I have had the experience twice in the country, where I have simply opened the bowels and put in a drainage tube and raised his right side and my patients have gotten well. Give him some kind of an operation. If you have a sharp pain in the bowels, make some kind of an operation to relieve him.

Dr. A. S. Risser, Blackwell: There is one suggestion that I think ought to be made, and that is the use of the local anesthetic instead of general anesthetic when the vitality is low. You can take more time and it is very easy under the local anasthesia to make the operation.

Dr. C. W. Heitzman, Muskogee: Dr. Long has brought to our attention, one of the diseases which has been rightly denominated a border line disease. Such diseases must bring about an intimate relationship between the physician and surgeon. In this class of diseases when the physician is in the least bit of doubt he should call in the surgeon. All deaths from typhoid do not take place from perforation. We may have typhoid fever without any local manifestation in the bowels. Like pneumonia, it is a misnomer. The fact that in the first instance the bowels are affected and in the latter the lungs, simply means a local manifestation of the disease. Either may produce death without the bowels or the lungs being involved.

Dr. Long (closing): I thank you very much gentlemen for your kindly references to this paper. The statistics I gave were from Dr. J. T. Finney of Baltimore.

Dr. West, I think, has made a point that it is practically a hopeless case without operation. I think it is possible that once in a while a case gets well. The main thing for you to do is to make the diagnosis in time to do something for the patient. If we wait too long we can do him no good. He is better able to respond when the operation is taken early. The later cases give us the most trouble, when the patient is not at himself, when he has some abdominal disturbances, this general condtion should be thoroughly investigated.

The point Dr. Risser made of doing the operation with a local anesthetic is a splendid point, and we can do most anything now if we take long enough time, and under the local anesthetic we can take time.

A STUDY OF TERATOLOGY, WITH PRESENTATION OF SPECIMEN*

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The word terata may be applied to any abnormal growth but is best applied to monsters. The cause of teratoid tumors or teratomata is to be sought in congenital maldevelopments as the dermoid cyst.

Teratology is the sum of what is known of monsters. Congenital deformities are not rare. A child born with a deformity so marked that it interferes with the general or local development of the body, is called a monster. Monsters often die in the early formative stage, or if delivered alive they usually die within a few hours, or days, being incapable of extra-uterine existence.

Antenatal Pathology: During the period of embryonal life, which is computed by various authors at from six to twelve weeks, what is known as organo-genesis occurs. In other words, the future organs of the body are rapidly differentiated from the primordial embryonal tissue, so that at the termination of this cycle they have attained almost complete developemnt. During the remainder of intra-uterine life there is little more than an increase in size, just as in extra-uterine life. It seems most natural to suppose that diseases in the embryo must be manifested by arrested or perverted development of organs rather than by ordinary pathological alterations. A slight malformation of an embryonal organ must increase in size with the growth of the latter; in no other way could the occurrence of extensive malformation be explained. Professor Mall of Johns Hopkins University states that after the second week pathological conditions are readily recognizable.

Diseases of the very young ovum are of two kinds, viz: primarily embryonal and primarily chorial. In the first, the embryo is affected while the development of the chorion is unchanged. In the second, the disease of the chorion results in the strangulation of the embryo. The affections may be represented in three degrees: First, simple arrest of development. Second, partial destruction of the embryo. Third, total destruction of the same.

In the majority of cases, according to Mall, the pathological process is in the embryo. The chorion is endowed with great vitality and is able to exist and undergo normal development for a considerable time after the death of the embryo, but finally, its independent existence comes to a standstill and it either persists as a cystic formation or collapses into a fleshy mole. On the other hand the embryo undergoes rapid destruction, if the chorion becomes affected. In computing the period at which abortions occur, we must be guided by the degree of development of the chorion and not by the embryo, as in simple arrest of development we note a two weeks embryo in a four weeks ovum.

Causes are divided into internal and external. Recent experimental work has

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shown that it is quite certain that external agencies have much to do with the formation of monsters. Heredity has a great influence, since the same peculiarity is seen in several members of the same family. A generation may be skipped and the deformity appear in the third generation. These natural causes are not yet understood, therefore, they are called germinal, since they are inherent in the ovum. That the sperma has some influence in the production of monsters is proven by the experiments of Bardeen, who saw deformed ova result from fertilization by the sperma of toads which had been exposed to the X-ray.

Of external causes may be mentioned injury to the abdomen or uterus, diseases of the uterus, perhaps gonorrhoea, diseases of the chorion and amnion, abnormal implantation of the ovum in the tube, arrest of development as the result of thermic, chemical or other physical action. It has been proved that lithium, sodium, potassium and magnesium have a special selective action on the cells of the morula and produce charactistic monsters, some of the poison affecting the nervous system and other the heart.

Stockard and Lewis produced 50 per cent cyclopian monsters from the eggs of the common minnow by treating them with solution of magnesium chloride. Hertwig suggests, and DeLee agrees with him, that chemical poison circulating in the maternal blood may affect the embryo and cause monsters.

Nowadays but few practitioners, and no scientists, believe the old notion that the mental state of the mother has a direct influence on the development of the child, but many careful observers, among them DeLee and Ballantyne, are convinced that shock, worry and deprivation may produce vascular and nutritional disturbances of the endometrium, which may affect the growth of the ovum. Mall believes amniotic adhesions to be secondary rather than primary. Syphilis must be emphasized in the production of monsters.

Monsters are divided into two classes, single and double.

Single monsters are of three varieties: First, monstra per defectum; where all or part of an organ is missing, viz: acrania, anencephalus, microcephalus. Second, monstra per fabricum alienam; where an organ is wrongly formed or misplaced, as heart, kidney, testicles or colon. Third, monstra per excessum; where an organ is enlarged or duplicated as hydrocephalus.

Double monsters come from one ovum and are developed from one germinal vesicle. Two germinal spots, two primitive streaks, or two medullary grooves may be formed, or later in growth, a duplication of one or the other end of the germinating zone takes place. If two embryonal areas appear it is possible that two complete individuals, or if the two areas are not entirely separated, united twins will result. Entrance of more than one spermatazoid into the ovum is not the cause, because eggs so impregnated usually die. The etiology of double monsters is unknown, and whether there is a splitting of one primitive streak or the fusion of two primarily formed is unknown. They are classified as follows: First, terata katadidyma; is fission from head down, one pelvis, two legs, the trunk being separate. Second, terata anadidyma; here splitting is from below upward, two complete bodies and one head. Third, terata kata anadidyma; homologus twins, may be attached by the whole dorsum or ventrum or by a very small attachment as the sternum (sternopagus), the abdomen, or sacrum (pyopagus). Example, the Bohemian sisters, or Ensiform appendix (ziphogogus) as the Siamese Twins.

Clinical aspect of monsters; since single monsters are more common than double they are of more interest to the accoucheur and they produce dystocia more frequently, because they are more often developed to maturity and because enlargement of the parts is so often met with. Hydrocephalus, anencephalus, with broad shoulders, hernias and accumulation of fluid, in the body cavities, are the usual conditions found, but they present simple problems of treatment. Not so with the double monsters, which may give rise to dystocia, dangerous and complicated operations are necessary to effect delivery.

Diagnosis: Before labor a monster may be suspected. Hydrocephalus could be diagnosed and an anencephalus if the examiner were on the alert. The X-ray is now available and since recurrence is not rare, a history is of service in the diagnosis.

During labor the possibility of a monstrous formation is to be considered, as it might be embarrassing to deliver a monster by a cesarean section; DeLee says it has happened to clever accoucheurs. An anencephalic monster presenting by the head might be mistaken for placenta praevia, prolapse of the cord, simple face or breech presentation. The association of deformaties will aid in diagnosis, for instance, in a breech delivery with a spina bifida one may suspect hydrocephalus, or if the delivered head shows hairlip and delay in delivery of the trunk one may suspect a monster single or double. DeLee states, double monsters have never

been diagnosed before labor. Twins have been suspected. If there is delay in delivery, which is not overcome by the usual manipulations, an examination should be made with the hand. An anesthetic should be given for the sake of deliberation, and in primipara a deep episiotomy is advisable. Such an exploration should determine the enlargement of a part of the foetus, a tumor of the uterus or fetus, a double monster, the extent and location of fusion, number of arms and legs and the movability of one child on another.

I will now give the history of this case:

Father, age 29, occupation book-binder. Past history, usual diseases of childhood, denies all history of venereal diseases. In 1915 he had a severe case of alopecia areata, which still persists and looks suspiciously luetic. Dr. W. H. Bailey, Pathologist to Wesley Hospital, has made a Wasserman and the report is negative.

Mother: Mrs. R. History, multipara, age 27, occupation housewife. Ordinary diseases of childhood, was a strong, healthy girl prior to her marriage, seven years ago. She gave history of abortion at six weeks or two months, then later an abortion at three months, about five years ago. Then delivered a healthy child, full term, three years ago, normal except a naevus vasculosis on the forehead, which was removed six months later by carbon dioxide snow. Last pregnancy beginning May, 1915, seemingly a normal pregnancy until after quickening, then the mother complained that the child never moved like the previous one did. She described it as only a flutter, which made her very uncomfortable and she was unable to be about.

On account of excessive hydramnios, the external anti-partum examination was never a satisfactory one. On February 3rd, 1916, labor began at 3 a. m. At

7 a. m. examination revealed three fingers dilatation, bag of waters intact. 9:30 labor pains violent. Membranes ruptured with the expulsion of a large quantity of amniotic fluid. The mother complained of a peculiar jerking of the child in utero. This occurred again after an interval of probably one minute. Internal examination revealed a face presentation, eyes bulging, low forehead, absence of anterior and posterior fontanelles, head sloped backward with absence of the occiput. The ununited halves of the posterior spine could be felt. The diagnosis of a monstrosity was made. After waiting a short time and no engagement occurred, the gravida was given an anesthetic and a combined podalic version and extraction was performed. The delivery confirmed the diagnosis of a monstrosity of the anencephalus type. See illustrations herewith. The placenta was delivered by Crede's method. The puerpera made an uneventful recovery.

LARYNGEAL DIPHTHERIA*

H. M. WILLIAMS, M. D., Wellston, Oklahoma.

As our subject indicates, we will confine our discussion as closely as practicable to that phase of diphtheria known and recognized as the larygneal type. This form of diphtheria is caused by the same bacillus "Klebs-Loeffler" as the regular form, the main difference being the location or seat of infection. The bacillus in this particular type lodges and finds its growth in the larynx, may extend into the trachea and the bronchi, thus producing a symptomology in many respects different and a condition more difficult to combat.

In this type of diphtheria the larnyx is the primary seat of infection in the greater majority of cases, though oft times it may be an extended growth of a neglected case of the regular form producing a typical case of the laryngeal type.

Some writers hold that a membranous laryngitis may be produced by the pus cocci alone, unassociated with the "Klebs-Loeffler" bacillus, but are of the opinion such cases are rare and, in the absence of positive proof, should be regarded as laryngeal diphtheria. That a membranous laryngitis of the streptococcic variety occasionally occurs subsequent to an attack of measles is affirmed. Further, it is an established fact that in many cases of laryngeal diphtheria, that some form of the pus producing cocci are to be found present.

The symptoms of a case of laryngeal diphtheria are so pronounced that a diagnosis to the alert physician is not difficult. It is true foreign bodies lodged in the air passages, or false growths due to the streptococci variety might assimilate similar symptoms, but the infrequency of such a condition existing will be a valuable aid in reaching our conclusions.

At the onset the child will rarely complain of chills, fever and malaise, as in the regular form, but the first symptom noticed is a slight hoarseness, which gradually increases, and takes on a croupous condition. The progress is so gradual that it may continue for twenty-four to seventy-two hours before a physician is summoned. The delay being in a measure due to the mildness of the attack, or the general characteristics of the child. In most cases of this form of diphtheria the parents, at the beginning, think it to be a case of ordinary croup, and the more apt are they to think so if the case should develop in a child subject to croup. The area of infection is not great, therefore the amount of toxins absorbed are slow at first, and rather than having a temperature, the temperature is generally subnormal. The pulse is rapid and compressible. "The laryngismus stridulus" type of breathing once heard is never to be forgotten. A cyonotic condition, dyspnea, the child gasps for breath, wanting to be taken out to an open door or a window, and at times pleads to be taken out into the open air.

Upon examination of the throat, it will usually reveal a congested condition of the tonsils, and mucous membrane of the fauces, with a dark red color, having a superficial gray tinge, but no false membrane.

The constitutional symptoms become more marked, as the disease advances, the pulse will become more rapid, and compressible, the cynotic condition more marked. The child gradually becomes weaker. A fatal termination in this type of diphtheria is due, usually, to suffocation and not to a general toxaemia. Contrary to diphtheria of the faucial variety, out of a series of one half dozen cases, we have not seen a kidney complication of any note, nor the manifestations of albumen in the urine, where the primary lesion was the larynx, while in those cases that have extended from the fauces to the larynx, trachea and bronchi, as a secondary infection, albumen is usually present, and the case assumes a malignant type, with exaggerated symptoms.

It is generally conceded that diphtheria is a local infection producing constitutional symptoms, rather than a constitutional disease manifesting local symp-

*Read before the Section of Pediatrics, Oklahoma State Medical Assn., May 10, 1916.

toms. Naturally the greater the area of infection, the greater amount of toxins that will be absorbed into the system through the lymphatic and capillary circulation.

Upon being summoned to a case that presents the above symptoms, it is our rule to assume that we have the presence of the "Klebs-Loeffler" bacillus and administer treatment accordingly. The average practitioner has not the laboratory facilities for making the necessary bacteriological test, nor if he did have, would it be wise to consume the time at the further risk of our patient's life, when he has, as in the majority of cases, been summoned at the advanced stage of the disease. Few, if any, diseases confront the physician that demands more prompt and more radical treatment than the subject under discussion.

The method of treatment usually adhered to by the writer is as follows:

Our practice being largely confined to the rural districts, it is our custom, upon being called to a case presenting the above symptoms, to take with us diphtheria antitoxin. In case the diagnosis is that of laryngeal diphtheria, the average dose of antitoxin is given, 3000 units for a child of two years, increasing and decreasing according to the age, giving the maximum rather than the minimum amount.

Immediately the organs of elimination are looked after. Heart stimulants are usually needed. Expectorants are administered at frequent intervals, to prevent the mucous excretion from lodging in the already obstructed air passages.

The use of astringents to tonsils and mucous membrane of the throat to prevent further thickening of either if possible.

Apply heat both dry and moist to the muscles of the throat from the outside, in order to stimulate circulation to that location.

Give plenty of fresh air. Keep the body and limbs wrapped in a blanket. Diet should consist of liquids. Keeping the patient as quiet as circumstances will permit.

The bowels are opened with a combined dose of calomel and caster oil. The heart action is maintained by use of strychnae. As an expectorant, syrup of squills and spirits of ammonia aromatic given in a vehicle, the former acts as an expectorant and the latter as both a stimulant and dissolves any mucous that might be thrown off by the lungs to obstruct the air passages.

Administer as an astringent to the tonsils and mucous membranes tincture of iron in glycerine, giving us both an astringent and tonic effect.

Milk is the most convenient and practical diet and should be administered at intervals of every three or four hours.

As to the use of vapors under a sheet, I have not found the use of them beneficial or advisable, as the above expectorants will act as a stimulant to the excretion of the mucous surfaces, and nothing more could be expected from the sheet vapor, the use of which is very undesirable to the child, who is exerting every energy in its power to breathe. Why hamper them further?

Diphtheria antitoxin being the remedy to be relied upon, the initiative dose should be repeated at the end of eight hours, from then on give every eight to twelve hours, owing to the severity of the case.

As to intubation and tracheotomy, we have not practiced either, but in the hands of some physicians have proven beneficial.

The amount of antitoxin to be administered in a given case depends largely upon the quantity and virulence of the absorbed toxins. As already stated, the area of infection is much less than in the regular type, the process of absorption in the larynx, trachea, and bronchi is very slow, due to the fewness and smallness of the capillary vessels, while in the throat, due to the lymphatic glands and blood vessels absorption readily takes place.

Rarely in the form under discussion will we find the amount of toxins in the

blood, hence it is not necessary to administer the amount of antitoxin as we would in the more malignant type. It is our opinion, because of the distressed condition of the patient, that possibly larger quantities are adminsitered than is actually necessary in many cases.

There is no definite means by which we may determine the amount to be given. In McKee and Wells recent works on children, they quote the following Wm. H. Welch:

"Experimental evidence favors the theory that antitoxins act through the agency of living bodies, and probably in the sense that it renders the cells tolerant of the toxin. It is not to be expected, then, that the effects will follow the injection of serum with the same precision and certainty that is shown in chemic reaction, that cells must be in a condition to respond in a proper way. For one reason and another this responsive power may be in an abeyance; it may be weakened by intense or prolonged resistance of the diphtheria poison, by other previous or recurring diseases, by inherited weakness, or often there may be some individual idiosyncrasy which hinders the response of the cells to antitoxin. There is also a possibility that the antitoxin may neutralize the effects of certain toxins and not others in diphtheria."

From the above it will be seen that the amount to be used will depend in a large measure as to the reaction obtained.

It is further stated: "Antitoxin serum exerts no bactericidal effect upon the diphtheria bacilli, though when administered in sufficient quantity early in the disease, it arrests the spread of the disease, which is caused by the bacilli." Our observation is when persistently used the baccili disappear from the local site of infection much sooner than in cases treated without it.

Of the one-half dozen cases that came under our observation during the past fifteen months, three were well advanced, all were given the above treatment in addition to the antitoxin. The amount given in each case was as follows:

The first child, two years of age, at the end of forty-eight hours, stenosis yielded, after the administration of 12000 units of antitoxin given in four doses.

The second child, five years old, yielded at the end of seventy-two hours, after the administration of 19000 units given in five doses.

The third, a boy of seven years, was relieved after the administration of 14000 units given in four doses administered at the usual intervals.

It is reasonable to conclude that had all of the above cases come under the observation of a physician at the appearance of the first symptom, each would have yielded after the administration of the initiative dose.

The last case that came under our observation was a colored child seven years of age who but a few hours previous developed all the characteristic symptoms of laryngeal diphtheria, recovered from a single dose of three thousand units.

It is the opinion of the writer that the intravenous administration of antitoxin in advanced cases of laryngeal diphtheria would be very beneficial, but owing to the smallness of the blood vessels and the distressed condition of the child, we have not practiced this method.

As stated above, bacteriological findings show in many of these cases a presence of the various pus producing cocci. No doubt but there are many instances in which the administeration of some form of the mixed bacterins in conjunction with the diphtheria antitoxins might prove beneficial. Some authors advocate the administration of antistreptococci serum in conjunction with diphtheria antitoxin.

Our conclusion is, after having observed a number of cases of laryngeal diphtheria, that the physician must constantly be in touch with this patient from the first visit until stenosis is relieved, that the treatment must be heroic from the onset, that diphtheria antitoxin is both essential and beneficial, as a means of

relief, and when in doubt as to diagnosis, do not wait for further developments. Regardless of how mild the case may be, upon your first visit to the patient, administer antitoxin, as no harmful results will follow its use; if we err it is much better to err on the side of safety.

GONORRHEAL OPHTHALMIA*

R. L. MITCHELL, M. D., Vinita, Oklahoma.

In my paper I shall not attempt to discuss the subject from the view point of a specialist, but rather as a physician in a general practice and especially in his relations to the treatment of diseases of children. I shall bring to your attention no new thoughts on this well (but not too well) known subject. If I succeed in causing you to review with me, and again realize of its importance in relation to diseases, then I shall have ample reason to feel repaid for my effort.

Before the year of 1879 little was known of gonorrheal ophthalmia, the disease was prevalent, its real cause unknown. It was then Neisser succeeded in discovering the micro-organism which medical science today knows as "Gonococcus of Neisser."

Its preference seems to be urethra in the male, urethra and vagina in the female. Should this particular micro-organism reach the conjunctiva by some accidental means, it (there depending on incubation period, greater in the infant than in the adult, later being from twelve to forty-eight hours, while former is from forty-eight to seventy-two hours) sets up an active and destructive inflammation which may follow along the lachrymal canal into the nose and mouth.

Your attention then is directed by the present to this form of conjuctivitis, and I can not too often urge upon you the importance of being able to recognize it at the first appearance and administering the proper treatment before that time worn saying, "Too late," has arrived.

It is true the specialist can often cope with the above conditions better than we, but cases cannot always be referred to him, hence the necessity of being able to recognize and treat the condition as met in general practice. If we are to be known as our "brothers keeper," we should by no means allow our minds to forget the importance of gonorrheal ophthalmia. If there is one disease the general practitioner should recognize, it is this, whether he wishes to treat it or not.

You have but to let your memory run back a few days, weeks or years, perhaps to some eye clinic or school for the blind, when you at once recall the case or cases where sight has been lost, due to the infection of Gonococcus Neisser.

A blind mistake, due to the failure of some one, in not knowing and treating the condition as it then existed. In our early teaching we were told: "You are the possessors of five senses, seeing, hearing, feeling, tasting and smelling." I believe them to be enumerated according to their value; if this is true, then does it not behoove us to reacquaint ourselves with gonorrheal ophthalmia, and in so doing we may be enabled in the future to preserve the sight.

It is said twenty-four per cent of inmates of schools for blind of Europe is due to loss of sight from this one disease. Since the adoption of adequate treatment by ophthalmologists and physicians, the per cent has been reduced from seven and five-tenths to five-tenths, showing conclusively that purulent conjunctivitis is a preventable disease. Some states have recognized it as such and have made it an offense if preventive treatment is not applied at time of birth. The Certificate of Birth, Oklahoma State Board of Health, asks the question: "Did you administer in the eyes, two per cent solution argyrol?" This I do not think strong enough to have any virtue as a preventive.

*Read in Pediatric Section, Oklahoma State Medical Assn., May 10, 1916.

Not many weeks ago, the *Journal* of the American Medical Association made mention of a society being organized, I believe in Chicago, whose motto is: "Save the Babies' Sight." This it seems is a laudable move and from it I infer, blindness is preventable, when due to infection of Gonococcus Neisser. I might say Crede's method of treatment seldom fails, hence its importance.

Gonorrhoeal ophthalmia may then be defined to be a purulent conjunctivitis due to the infection of Gonococcus of Neisser. As a rule the prognosis in infants is less grave than that in the adult, due no doubt, at birth, the infection occurring from latent gonorrhoea, while type in the adult is more often the acute form when infective power is greatest, and too the infant's resistive power seems to be the greater. The disease runs a tedious course and when promptly and carefully treated is seldom well under four to six weeks.

A typical case presents swelling of lids. In infants, more often both eyes involved; in adults often only one eye. There is a hypersecretion of mucous or serum, there may be hemorrhage from eye lid, injection of conjunctive. The greatest damage to be feared in each form of the disease, is necrosis of cornea,—nutrition being interfered with through the activity of inflammation.

A positive diagnosis can only be made by the use of the microscope; unfortunately this can not always be had; if the case looks the least bit suspicious, the proper treatment should at once be given, prevention is far better than cure.

I shall try to outline the treatment which has done so much toward lessening blindness caused from this infection.

Prophylaxis we know is first. In 1881, two years after the micro-organism's discovery, Crede recommended that two per cent solution nitrate of silver be dropped into each eye; this by all means should be done when there is suspicion of the infection.

In obstetrical practice the attendant should be *surgically clean*, also everything he sees fit to use. Carelessness defines the physician's mistake more often than ignorance, an error which is not excusable.

I recall a case of blindness which presented itself in our clinic at school some years ago. You will pardon me for alluding to it. The story briefly told is: "I am a mid-wife by trade, not many days after leaving my last case, my eyes, one first affected, later the other, pain and swelling were present, this condition grew worse. I consulted a physician, still there was no improvement. My sight is lost and now I am here to see what you can do." No doubt the physician mentioned recognized the condition but was unable to render benefit. This case mentioned, judging from the history given and the condition of eyes, it was easy to make a diagnosis. She was told her condition was hopeless, that she was doomed to be blind the rest of her life.

This, gentlemen, is one among the many which has happened throughout our country due entirely to carelessness or ignorance.

Treatment: It is most simple but hard to carry out. This should be begun as soon as the first symptoms present themselves. If one eye is involved, the sound eye should be protected by placing watch glass over eye and sealing with adhesive; this should remain until infected eye is well. It is necessary to remove glass for cleaning eye; when done, the same should be reapplied.

Everything coming in contact with eye, all cotton gauze, etc., used in dressing, should be burned. This insures against infection in others.

The essential thing is to keep eyes free from purulent discharge by use of warm water or, better still, a saturated solution of boracic acid every half hour if necessary. The lids should be everted and a two per cent nitrate of silver solution applied, the excess be removed with tepid water.

Some ophthalmologists now prefer protargol which may be used 4 per cent once daily, weaker being used twice daily, 10 or 20 per cent; argyrol may be used still stronger and applied more often, it being less irritating.

Cold compresses are beneficial in allaying pain and inflammation. If swelling is great it may be necessary to slit the outer canthus. Should the cornea be involved it is well to dilate the pupil. Atropin grains, 1-10 to one ounce, relieves tension, which may prevent perforation or anterior staphyloma.

In conclusion, I wish to say that in gonorrheal ophthalmia we have a disease in which the innocent often pay the penalty for the crime committed by another.

It is our mission as physicians to render them all aid possible, and at the same time, if we can benefit those who by their mistakes become infected, we should be ready and willing to obey that divine command, "*Let There Be Light.*"

A CONDENSED REPORT OF THE AMERICAN PROCTOLOGIC SOCIETY, DETROIT, 1916.

By J. M. COOPER, M. D., Oklahoma City

The retiring president, Dr. T. Crittenden Hill, Boston, Mass., in his address "Why Proctology Has Been Made a Specialty" calls attention to the inadequate treatment of rectal diseases at the hands of the general surgeon. He says they have never taken the pains to learn the underlying principles of treating rectal diseases. He urges that proctologists be appointed on staff of all general hospitals. He regrets that the undergraduate does not have the chance to acquire reasonable proficiency in treating rectal diseases.

Dr. W. H. Staufer, St. Louis, reviews 1500 rectal cases which were operated, calling attention to the fact that 400 of these had been operated before by other surgeons. He says failure to get results were due to two reasons: First, not selecting the operation indicated by the pathology; second, to improper post-operative treatment.

Dr. G. S. Hanes, Louisville, Ky., states that active tubercular ulceration of the rectum or colon always produces a decided increase in temperature and pulse rate. Tubercular abscesses often appear about the rectum when patients otherwise show no evidence of tuberculosis. Tubercular abscesses and fistulae have a great tendency to undermine the skin.

The internal fistulous opening is rarely found in the rectal wall except where some other pathological condition exists, thereby lessening the resistance of rectal wall. The internal opening is usually found in the anal canal.

Pruritis ani is a local infection and should be treated with an autogenous vaccine made from the bacteria found at the anal margin.

Dr. J. R. Pennington, Chicago, made a preliminary report of his investigation concerning focal infection in the anorectal region. Streptococci, staphylococci, colon bacilli, and other bacteria were found in the crypts of Morgagni and other diverticuli or pockets of the anorectal region.

Dr. Rollin H. Barnes, St. Louis, recommends palliative treatment of fissure in ano by correcting the diet with reference to the excess of carbohydrates and fats in the diet, and the placing of the patient on a proteid diet for a time. When operation is necessary, he believes that the object should be drainage rather than paralyzing the muscular fibers.

Dr. Frank C. Yeomans, New York, thinks the tumors found in the colon and rectum, as the solitary polyp, multiple polyposis, multiple adenomamta, and villous tumors are inflammatory in character and further states such tumors often become malignant. Their early and radical removal is recommended.

Dr. Dwight H. Murray, Syracuse, N. Y., reports that in 123 cases of pruritis ani, the streptococcus fecalis was proven to be the etiology in 95 per cent of the cases. He recommends treating pruritis ani with an autogenous vaccine made from the streptococcus fecalis of over 1000 million dead germs to the cc. Dr. Murray says that some cases are complicated with a staphylococcus infection, and the autogenous vaccine of this germ should be used in addition to the streptococcus vaccine. Dr. Murray is more firmly convinced than before, that operations for the cure of pruritis ani, such as Ball's operation and its modifications, are absolutely contraindicated and should never be performed.

Dr. Lewis J. Krause, Cincinnati, says that spasmodic stricture is not a disease but a symptom of a more serious condition of the rectum. He also states that spasmodic stricture is often the forerunner of the fibrous benign stricture of the rectum.

Dr. W. H. Axtell, Bellingham, Wash., in speaking of acute angulation and flexure of the sigmoid as a causative factor in epilepsy, says the essential failure of treatment of these conditions lies in the fact that so few recognize the true condition, and, if the condition is recognized, there is not sufficient persistence in relieving the condition, or an ignorance as to the amount of the material the colon holds and as to when it is well emptied; thus they resort to mutilating surgery without getting results commensurate to the gravity of the surgery resorted to. Keeping the colon empty is the main object in the treatment administered by Dr. Axtell.

Dr. Donly C. Hawley, Burlington, Vt., prefers the left lateral prone position to the knee chest position in his sigmoidoscopic work.

Officers elected for ensuing year: President, Alfred J. Zobel, M. D., San Francisco, Cal.; Vice President, Granville S. Hanes, M. D., Louisville, Ky.; Secretary-Treasurer, Collier F. Martin, M. D., Philadelphia, Pa. The 1917 meeting will be held in New York City.

HEMOLYTIC JAUNDICE.

G. A. Friedman and Elihu Katz, New York (*Journal A. M. A.*, Oct. 28, 1916), report a case of acquired hemolytic jaundice relieved by splenectomy, which is the first, or one of the first, cases of this kind reported in American literature. In their comment on the history, they review the facts regarding hemolytic jaundice and its pathologic causes. The spleen has been classed among the ductless glands with one of its special functions, hemolysis. Hyperactivity of splenic function due to some unknown pathologic condition leads to an excessively marked hemolytic action called by Eppinger "hypersplenism." The hemolysis disappears or is strikingly altered by removal of the spleen, and some experimenters claim to have obtained an extract from the organ with hemolytic properties. The evidence for this is, however, meager. Another possible explanation of the condition is found in the association of unsaturated fatty acids and hemolysis. In splenectomy these fatty acids are reduced. The authors also describe the special features of the blood in hemolytic icterus, the increased fragility of the red blood corpuscles, which, however, may be continued even after splenectomy in some cases. The phenomenon of auto-agglutination has also been described in the acquired type, but it was absent in the case reported. The anemia in the hemolytic icterus is not as a rule severe, and is the direct result of the destruction of the blood. The splenomagaly is one of the principal characteristics, and the authors believe that splenectomy gives the best results in treatment.

PROCEEDINGS OF ST. ANTHONY'S CLINICAL SOCIETY

DR. D. D. McHENRY, Pres. DR. L. J. MOORMAN, Secy.

LABORATORY DIAGNOSTIC METHODS IN POLIOMYELITIS WITH REPORT OF THREE CASES.*

By O. J. WALKER, B. S., M. D., Oklahoma City
Director, the Wm. W. Bierce Research Laboratory of St. Anthony's Hospital

On account of the recent epidemic of anterio-poliomyelitis in New York City and adjacent community the three sporadic cases occuring in our city recently have attracted more than ordinary attention and may furnish some information of interest.

In the diagnosis of anterio-poliomyelitis the Laboratory is able to furnish valuable corroborative evidence only, but unfortunately no absolutely diagnostic findings. A brief review of the clinical laboratory findings by various workers will not be amiss here.

A very interesting test from a historical as well as a diagnostic standpoint is the inoculation of monkeys by means of washings from the respiratory and alimentary mucous membranes. This test, first successfully performed by Kling, Petterson and Wernstedt in 1911, demonstrated the presence of the infective virus in the nose and throat of patients sick with the disease and has since been used repeatedly for diagnostic purposes.

A second diagnostic laboratory method is the so-called neutralization test. Here the serum from the suspected case in the stage of recovery is mixed with a known fatal dose of an active virus. These are incubated and later injected intracerebrally into monkeys. Failure of the disease to develop indicates that the virus has been neutralized. This test however is not conclusive, for normal serums have sometimes successfully neutralized the virus. It is, however, quite obvious that these two laboratory methods requiring the use of monkeys are both too complicated and costly for ordinary diagnostic use.

Experimental animals suitable for diagnostic inoculation in poliomyelitis are few—being limited to apes, monkeys and rabbits. Monkeys and apes are ideal in their reactions but are too expensive and difficult to obtain, to be practical. Rabbits seem to possess the property of susceptibility to poliomyelitis in varying degrees, and in consequence of this inconstant reaction to the infection, are unsuitable for diagnostic purposes.

The spinal fluid is our most trustworthy and valuable aid in the early diagnosis of poliomyelitis and we should insist on immediate withdrawal of this fluid for purposes of examination in suspected cases. In the early stages the spinal fluid is increased in amount, but does not spurt as a rule as in tubercular meningitis. In character it is clear or slightly turbid (described by some as opalescent). It often forms a good fibrin reticulum on standing. There is slight to moderate increase in albumen and globulin in about 50 per cent of early cases. Fehling's is promptly reduced. Cell counts over 1000 are rare and counts between 100 and 200 are most common. The lymphocytes appear as high as 80 per cent and some consider this characteristic of poliomyelitic fluids.

Three rare types of cerebrospinal fluid have been noted. First—a slightly cloudy fluid, showing a polymorphonucleosis as high as 80-90 per cent. Second—a hemorrhagic fluid with the blood cells evenly distributed throughout. If first portion of fluid is caught in a test tube and a later portion of fluid caught in a separate tube both will be equally colored showing blood is not due to puncture. Third—a clear yellowish fluid which coagulates spontaneously illustrating the syndrome of Froin.

In the first 24 to 48 hours from its onset poliomyelitis must be differentiated

*From the Wm. W. Bierce Research Laboratory of St. Anthony's Hospital, Oklahoma City.

from the early stages of epidemic meningitis, or mild purulent meningitis, and also from a meningismus accompanying pneumonia or other infection. The clinical pictures presented by these diseases are quite similar and it is in distinguishing between them that the examination of the spinal fluid affords valuable information.

The spinal fluid from early cases of purulent meningitis show a varying degree of cloudiness, larger amounts of albumin and globulin, and a poorer reduction of Fehlings than occurs in poliomyelitis. The cell count in purulent meningitis is higher than in infantile paralysis, and polymophonuclears are present in 80-90 per cent. In purulent meningitis the causative organism can be found in the fluid except in the mildest cases.

In meningismus accompanying an acute infection the fluid is usually found increased in amount but normal in character. In tubercular meningitis, however, we usually have a clear fluid, increased albumen, globulin and cell count greater than in poliomyelitis. Reduction of Fehlings is usually not so prompt as in poliomyelitis though this is not an infallible rule as some early cases of tubercular meningitis reduce Fehlings very promptly. In both conditions there is an increase in the lymphocytic elements. The tubercle bacilli may be found in the fluid in about 90 per cent of the cases. Noble's ninhydrin reaction, positive in tubercular meningitis may also aid in the differential diagnosis together with the acute onset in anteriopoliomyelitis as compared with chronicity in tubercular meningitis. In cases seen a week or more after onset it is almost impossible to differentiate the spinal fluid of poliomyelitis from tubercular meningitis except by animal inoculation.

The spinal fluid in cerebro spinal syphilis is identical with that in poliomyelitis, but here we have the Wassermann reaction to aid us in the differential diagnosis.

The blood picture in anteriopoliomyelitis is not characteristic of this disease and is of value only as an indication of the presence of an acute infection. The red cell count is normal while the leucocytes are usually moderately increased with apolymorphonucleosis. S. R. Klein[1] in a report of 400 cases treated at the Willard Parker Hospital, N. Y., called attention to the fact that in nearly every case the urine contained albumin in moderate amount. I have not seen mention of this fact in any other reports and the urine in the three cases that have lately come under our care was negative throughout. Klein also noted an increased urea content in the urine, but this is present in any inflammatory condition.

A still unpublished report by P. C. Jeans,[2] St. Louis, and Meredith R. Johnston,[2] New York, of 105 cases examined in preparalytic, paralytic and abortive stages by the Lange collodial gold test, shows a remarkable constancy of positive reaction in all three stages. This test, it is claimed by them is a valuable aid in the diagnosis of abortive and preparalytic cases and is even useful in the differential diagnosis between anterio-poliomyelitis and tubercular meningitis. However, further corroborative work along this line is necessary to establish the true value of the test in poliomyelitis.

A brief report of our three cases, which are really typical from the laboratory standpoint will serve to illustrate these findings in general.

Leukocytes

Day of Dis.		Case No. 1646	Day of Dis.		Case No. 1655	Day of Dis.		Case No. 1700
2nd.	Day	9,800	1st.	Day	11,400	*6th.	Day	22,500
3rd.	"	*14,500	2nd.	"	*17,960	7th.	"	19,000
4th.	"	10,700	3rd.	"	7,900			
5th.	"	9,500			6,075			
7th.	"	7,900						

*Day following intramuscular injection of convalescent serum.

Spinal Fluid

Case	Cell Count	Differential Polys.	Lympho.	Globulin	Albumen	Fehlings	Color	Tension
1655	133	44	56	Neg.	Lt. Cl'd	Neg.	Opalescent	Increase.
1700	1st. Dy. 450	25	75	Pos.	Neg.	Neg.	Turbid	"
	2nd. " 106	30	70	Pos.	Neg.	Sl. reduction.	"	Slight increase

On the days following the intra muscular injection of convalescent serum a marked rise in the white cell count was noted in all three cases which gradually subsided in a few days as shown in two of the cases.

In case 1700 there was a marked change in the number of cells and tension of the spinal fluid on the 2nd day and the question arose whether it was the convalescent serum administered intramuscularly the day before, or whether the reduction in the cell count was due simply to the drainage afforded by the withdrawal of 25 c.c. of the turbid fluid on the previous day.

This result is similar to that obtained by C. W. Wells[3] of Chicago in a series of 15 cases treated by convalescent serum. He administered the serum intramuscularly, intravenously and intraspinally. The cell count in the spinal fluid usually increased following first intraspinal injection, then gradually decreased, disappearing entirely following the 3rd or 4th injection. Wells reported best results with intravenous, or intravenous plus intraspinous adminsitration and advised repeating dose of 10 to 50 c.c. every day for 3 or 4 doses. He also claimed that convalescent serum from persons who had the disease 32 and 39 years ago was not as active therapeutically as was those of more recent attacks—two weeks to 9 years.

1. S. R. Klein, M. D., P. H. D., *New York Medical Journal*, Vol. CIV, No. 5.
2. P. C. Jeans, St. Louis, and Meridith R. Johnston, New York.
3. C. W. Wells, Jr., A. M. A. Vol. LXVII, No. 17.

IODID MEDICATION BY THE MOUTH.

Studies of the spinal fluid during iodid medication by mouth are reported by J. H. Catton, San Francisco (*Journal A. M. A.*, Nov. 4, 1916), made in order to determine the presence of organic or inorganic compounds of iodid. Study 1 includes observations on five patients in the San Francisco Hospital on routine iodid medication, and Study 2, observations on one person receiving very large doses of iodid. Two specimens of spinal fluid were used in each case. The test was made as follows: "A portion of spinal fluid was added to some dry sodium carbonate and the mass powdered; the latter was added slowly to a quietly fusing mixture of potassium nitrate and sodium carbonate; the entire mass was allowed to cool, was removed from the crucible and dissolved in distilled water; to a portion of the latter was added some starch paste, and then nitric acid containing a little nitrous acid, drop by drop. Controls containing minute traces of iodin gave a blue color, but no reaction occurred with any of the fluids examined." In all the series of cases examined by the above and other tests, regardless of the amount of iodin administered by mouth, no iodin or compounds of iodin were found in the spinal fluid. Catton concludes that either iodin compounds do not pass through the choroid plexus in any measurable amount or such iodin as does reach the spinal fluid is very rapidly fixed in the tissues.

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THIS IS THE OFFICIAL JOURNAL OF THE OKLAHOMA STATE MEDICAL ASSOCIATION. ALL COMMUNICATIONS SHOULD BE ADDRESSED TO THE JOURNAL OF THE OKLAHOMA STATE MEDICAL ASSOCIATION, BARNES BUILDING, MUSKOGEE, OKLAHOMA.

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Local news of possible interest to the medical profession, notes on removals, changes in address, deaths and weddings will be gratefully received.

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EDITORIAL

A STATE HOSPITAL PROPOSED FOR THE UNIVERSITY.

Among the important items Governor Williams will suggest to the Legislature is an appropriation of $200,000 for the purpose of building a state hospital to be controlled by the Medical Department of the State University. It is said that a part of the fund will be used for building, the remainder for equipment. Incidental to the appropriation is contingent an offer of Oklahoma City to deed to the University the University Emergency Hospital, a modern structure already in occupancy and use.

Governor Williams takes the view, and in that he has the hearty agreement of all thinking persons, that an important part of a university is its ability to train people in all proper branches of endeavor, that medical education is one of the important functions of the state and its university, that if we are to have a medical department it should be the best our energy, brains and money can create, and that we should not take a secondary place in medical education, any more than in legal, agricultural or other education.

We should not forget the plight of the graduates of our school in certain events or what the State owes the graduate in the way of standard, efficient education and training.

The grading of medical schools has been a slow and laborious process, and has finally come to the point that the term "Class A, B," etc., is a positive fixing of class, observed and respected by practically all the State Boards of Examiners of the Union, in fact the class is nearly definitely recognized and specifically mentioned in many state laws, if not mentioned in name, other description is given, which means the same.

Oklahoma has long been assigned to "Class B," an assignment not relished by high-spirited, finely equipped members of our profession and the proposal to build a state hospital for the school is a definite move to get out of that class. One of the requirements for a college to enter class "A" is that the school should directly control and operate a hospital of not less than one hundred beds. If this appropria-

tion passes, our University will have such a hospital, and in that achievement will have overcome the greatest obstacle, in fact the only real one left to meet.

It should be understood that this proposed hospital will not be for the benefit of any particular locality, but for the good of all the people of the State. As has been aptly pointed out by Governor Williams, it will be an important investment—an investment that will pay priceless dividends through the preservation of the health of our citizenship; through the development and the practical application of means looking to the prevention of disease, and through the tremendous conservation of energy and of life itself by taking care of our indigent sick.

Oklahoma City has a number of hospitals, with great capacity, equipment and ability, but the institutions are not heavily endowed and are in the creative state more or less. The City of Oklahoma itself, willing and ambitious to excel in all things, has a great bonded indebtedness to care for; necessary extensions in all directions must be made, so far as their local improvements call for, and looking at it from that standpoint the people should hardly expect them to carry all the burden of maintenance of an institution which will be maintained for the double purpose of caring for the needy poor who will be referred to it for treatment from any section of the state, and at the same time maintained as a center of constantly growing worth and necessity for the higher medical education of our youth.

The clinical advantages of such an institution to our student body cannot be overestimated, on the other hand the very great advantage accruing to our indigent and worthy sick cannot be estimated. As the matter now stands, they are treated by every system imaginable, by the competent and incompetent, mostly the latter.

The medical profession should know that Oklahoma appropriates, compared to other states, a very small sum of money per capita for support of education. We have lately had the enviable distinction of being pointed out as the worst example of a state failing to give her university the support she deserved—in the comparative lists we stand at the very bottom. With this we should not forget that of the sums appropriated the lion's share goes to work along other lines than medical education.

We cannot conceive of a more favorable time for the advancement of health conditions than that immediately before us. The state administration is unequivocally committed to it, and considers the establishment of a strong medical department of the State University the first fundamental step in that direction. Would the people—not to say the medical profession—of Michigan be willing to give up Ann Arbor? Would Massachusetts do away with Harvard? Would the people of Maryland be willing to see Johns Hopkins destroyed? At this moment we have the opportunity to lay the foundation of an institution such as these. We have but to stretch forth our hands and grasp it. Up, therefore, each one, and do his whole duty in this undertaking which means much for the future weal of our commonwealth.

DOCTOR, HELP YOUR SECRETARY

All membership automatically expires December 31st. Do not wait for your county secretary to look you up—mail him a check today—and thereby take the effort necessary for him to see you off his hands and save his energy for something more worth his while than making a collecting agent of himself.

CURRENT MEDICAL LITERATURE

CONDUCTED BY

DRS. L. F. WATSON AND L. J. MOORMAN, OKLAHOMA CITY.
AND FRED J. WILKIEMEYER, MUSKOGEE

SUSCEPTIBILITY OF MAN TO FOREIGN PROTEINS.

(W. T. Longcope, *American Journal of Medical Sciences*, November, 1916.)

After reviewing the history of this subject, beginning with the observations of Blakely in 1873, on the effect of pollens upon the nasal mucous membrane, conjunctiva and scarified skin, he gives a most interesting and comprehensive report of recent studies along this line, including the results of his own observations. It is most interesting to see, in following this work with Longcope, how the searchlight of science has removed from the realm of mystery many of the conditions which were breaking the back of the term idiosyncrasy.

Today we have a better understanding of the family or individual susceptibility to asthma. We are no longer at a loss to explain the violent gastro-intestinal disturbances in certain individuals following the ingestion of particular food products, as eggs, milk, meats, shell fish and certain fruits and vegetables. In other words, the child who cannot take eggs or cows milk is suffering from a sensitization to these foods.

We are beginning to understand the various skin eruptions dependent upon contact with foreign proteins; also the few instances of hypersensitiveness to the sting of insects.

Interesting reference is made to drug susceptibilities, especially the reactions to iodine and arsenic compounds. He refers to Swift's experiments with iodids and salvarsan leading to the belief that the anaphylactic-like symptoms which sometimes develop, are due to a combination of the drug with the patients serum resulting in a new protein compound to which he may be actively sensitive.

He makes clear the distinction between artificial sensitization and spontaneous sensitization, the latter existing without the known introduction into the system of foreign protein. The sudden death following the first dose of antitoxin is given as an example of the latter.

Longcope says: "Patients can thus be roughly classified as those who react to the sera of animals, those who react to eggs or the sera of fowls, those who react to the extract of shell fish, and those who react to the protein of plants."

The following are suggested as possible paths for spontaneous sensitization: Wounds of skin and mucous membrane; also unbroken mucous membrane and the transmission from mother to offspring either directly as a true inheritance, or by passive transference of the immune bodies by way of blood or milk.

Attention is called to the fact that normal individuals may become ill with symptons which resemble anaphylactic shock, from the absorption of poisonous products which may through various means be split off from the protein molecule, and that such cases must be differentiated from true anaphylaxis due to spontaneous sensitization.

The latter part of this paper is devoted to a discussion of allergy or altered susceptibility to bacterial proteins, as manifested by general reactions in the course of artificial immunization and the various diagnostic skin reactions. While the analogy is very close, it is suggested that much experimental work is necessary to establish the identity of allergy and anaphylaxis. L. J. Moorman.

MORE RADICAL TREATMENT OF DUODENAL AND GASTRIC ULCER.

Deaver, John B., Philadelphia, Pa., *Annals of Surgery*, September, 1916, states it is now known that duodenal ulcer is more frequent than gastric ulcer. Duodenal ulcer is most often located upon the anterior and lateral wall of the first portion of the duodenum. The next most common site is the posterior wall of this portion of the intestine, and the least common site the inner pancreatic wall of the second portion of the duodenum.

Any ulcer that has not gone deep enough into the mucosa to cause hemorrhage, that has not obstructed the pylorus, or remained chronic long enough to be indurated, can only be demonstrated with certainty by opening the viscus to inspection; this I have done a number of times.

In my opinion, as well as in the opinion of others, posterior gastro-enterostomy does the greatest good when the pylorus is obstructed. In ulcers located other than at the pylorus, this operation does but little if any good; and, if any, only by allowing enough bile and pancreatic juice to enter the stomach, thus producing a neutralizing effect upon the hydrochloric acid. That this operation accomplishes any good by drainage alone, I think is doubtful. To repeat, where this operation accomplishes most good is when there is pyloric obstruction and when the ulcer has been excised.

When excision of the ulcer has not materially interfered with the mechanics of the stomach, with the exception of the pyloric ulcer, posterior gastro-enterostomy should not be done. I never make a posterior gastro-enterostomy in central resection of the stomach, for example.

To summarize, I have come to the conclusion that all ulcers of the duodenum or stomach are best treated by excision.

In the presence of a strong clinical probability of gastric ulcer supported by positive X-ray evidence or doubtful findings to palpation and inspection I do not hesitate to perform gastrotomy in order to settle the matter by inspection of the mucosa.

In the individual case the advisability of excision depends upon the local condition. No ulcer should be excised when subsequent closure and anastomosis present too great operative hazards. It is in such cases that operations which depend upon drainage and alteration of gastric chemistry have their field. L. F. Watson.

THE PATHOLOGIC CHANGES IN THE SYMPATHETIC SYSTEM IN GOITER.

Wilson, Louis B., of Rochester, Minn., in the *American Journal of The Medical Sciences*, December, 1916, states the amount and character of the pathologic changes in the sympathetic ganglia removed at operation or at autopsy from patients with exophthalmic goiter have been studied by other observers, meagerly and rarely by modern methods. So far as the findings have been positive, they have shown that in exophthalmic goiter the cells of the sympathetic ganglia exhibit various stages of degeneration. The paucity and incompleteness of the reported observations, however, together with Cannon's recent experimental production of some of the symptoms of exophthalmic goiter in cats by constant stimulation of the thyroid through the sympathetic system, have warranted a more careful study of the material accumulating in the Mayo Clinic.

Thus it will be seen that roughly the degree of hyperpigmentation, the amount of granular degeneration, the atrophy and the reduction in the number of cells was in direct relation to the continuation and subsequent remission of the symptoms of hyperthyroidism.

Though the present number of cases is too small from which to draw positive conclusions, the observations so far seem to indicate that early in acute hyperplastic toxic goiter there is present in the superior cervical, and probably also in some degree in the other sympathetic ganglia, a process which is causing active stimulation, overfunction, and progressive stages of degeneration in the ganglionic cells. As the symptoms of exophthalmic goiter regress, evidence is found in the ganglia of the cessation of this degenerative process in the ganglionic cells not previously changed past recovery. After the acute toxic symptoms have entirely ceased for years, there remains little evidence of the destroyed ganglionic cells, most of the fatty pigmentary remains of the cells apparently having been absorbed.

Thus it is suggested that neither advanced age, chronic wasting disease, nor chronic inflammatory processes necessarily cause degenerative changes in the sympathetic ganglia resembling those in exophthalmic goiter.

The question is suggested whether the involvement of the superior and middle cervical sympathetic ganglia in expohthalmic goiter is but a part of a general metabolic disturbance evidenced by similar changes in the sympathetic ganglia elsewhere in the body, or whether it is confined to the cervical sympathetic ganglia alone. In only four cases in which the cervical sympathetic ganglia were shown to be involved have we been able to study the ganglia from other portions of the body. In none of these was there positive evidence of involvement other than hyperpigmentation. L. F. Watson.

PRIMARY TREATMENT OF WOUNDS IN CIVIL PRACTICE.

Porter, Miles F., in *Surgery, Gynecology and Obstetrics* for August, 1916, states that belief in the old dictum that "Nature is a good physician but a poor surgeon" has done more harm than good. The fact is that she does fairly well in both branches of practice provided she receives intelligent aid rather than pernicious interference. The primary dressing should be the final one in many cases, and in the vast majority of cases it should not be changed until granulation is well established. To change the dressing on a wound unnecessarily is a surgical sin.

Generally speaking one should refrain from using strong antiseptic lotions and from vigorous attempts at the mechanical cleansing of wounds.

The "thorough use of the curette" for the removal of foreign particles and rough and prolonged search for foreign bodies is unsurgical and unwarranted. The surface of a wound is best cleansed of foreign particles by a stream of sterile water or mild antiseptic solution and the use of dry gauze wipes, supplemented when necessary by the use of forceps.

The temptation is great to readjust structures as nearly to the normal as possible and fix them with sutures, wires, nails, plates, etc. That this, our zealousness, has caused the loss of limbs and lives that might have been saved by a less strenuous but more judicious primary dressing is beyond question.

One should be extremely cautious about removing bits of tissue which seem hurt beyond recovery, and this caution should be emphasized in dealing with wounds of the hands and fingers. The objection to this "trimming" process is that it opens new atria for infection, causes unnecessary sacrifice of tissue, increases the bleeding, and adds to the time of anaesthesia. The surgeon will do this "trimming" job more expeditiously than Nature, but Nature will do it much more economically and safely.

As a rule dry dressings are preferred. Raw surfaces should be covered by narrow strips of protective to prevent sticking of the dressing and the consequent disturbance of the granulations when the dressing is changed. A non-odorous, non-irritating antiseptic powder used freely in lacerated wounds is advantageous. L. F. Watson

A STUDY OF THE MENOPAUSE WITH SPECIAL REFERENCE TO ITS VASOMOTOR DISTURBANCES.

Culbertson, Carey, Chicago, in *Surgery, Gynecology and Obstetrics*, December, 1916, states that from this study we may conclude that:

1. The menopause is a functional derangement on the part of various glands of the endocrine system subsequent to the cessation of the ovarian secretion.

2. On this basis may be explained the psychic and somatic manifestations of the menopause.

3. The vasomotor disturbances represent an instability of arterial tension.

a. In the majority of cases this takes the form of a vacillating hypertension, both systolic and diastolic.

b. The diastolic pressure is not elevated proportionately to the systolic. This produces an increased pulse-pressure.

c. Hot flushes, sweating, and other vasomotor symptoms are directly created by the vacillations in arterial tension.

d. In a minority of cases there is arterial hypotension and here also the systolic and diastolic pressures are out of proportion.

4. Hypertension is apparently due to a relative over-sufficiency on the part of the hypophysis or the adrenals.

5. The psychic symptoms are apparently influenced by thyroid dysfunction; in the majority of cases a hyperthyroidism, in the minority, a hypothyroidism.

6. The administration of the missing hormone, represented by the extract of corpora lutea from animals in early gestation, brings about a gradual restoration to normal of the blood-pressure with disappearance of the mental symptoms.

7. This reduction of blood-pressure by organotherapy together with the disproportionate systolic and diastolic rise is offered as evidence that the hypertension is a functional one and not due to organic changes.

8. Blood-pressure estimation is essential, as a means both of measuring the degree of menopause disturbance and of controlling its therapy.

9. An occasional pressure reading is of little or no value. Tension must be determined at frequent intervals, preferably daily until improvement is well under way.

10. The significance of functional hypertension as a factor in uterine haemorrhage is obvious and will be made the subject of a subsequent report. L. F. Watson.

PERSONAL AND GENERAL NEWS

Dr. B. F. Collins, of Stilwell, has moved to Nowata.

Dr. C. A. Howell, of Frederick, has moved to Afton.

Dr. I. W. Rogers, of Watts, has moved to Kelleyville.

Dr. C. C. Gardner, will move from Atoka to McAlester.

Dr. M. H. Edens has moved from Verden to Anadarko.

Dr. C. H. Day has moved from Thackerville to Ardmore.

Dr. C. D. Dale, Keota, will move from that place to Caddo.

Dr. M. A. Warhurst has moved from Sylvian to Seminole.

Dr. W. D. Dawson, Mangum, has moved to Grenado, Col.

Dr. D. A. Shoun, Fairfax, is visiting the Rochester Clinics.

Dr. E. T. Sandberg has moved from Cordell to Cardinal, Va.

Dr. C. L. Hood, Indiahoma, recently suffered a fractured arm.

Dr. J. M. McQuaid, is moving from Cloud Chief to Lookeba.

Dr. D. Armstrong announces his removal from Mead to Durant.

Dr. and Mrs. M. M. Webster, Stratford, visited Georgia in December.

Dr. and Mrs. J. E. Bercaw, Okmulgee, visited San Antonio in December.

Dr. G. M. Clifton, Norman, is doing post graduate work at Tulane University.

Dr. W. J. Whitaker, of Pryor, has returned from post-graduate work in Chicago.

Dr. A. B. Montgomery, Checotah, visited the home folks in Rock Island in December.

Dr. P. M. Harraway, Marlow, was recently painfully injured by falling down a stairway.

Dr. M. Gray, of Mountain View, is spending three months in the New Orleans Polyclinic.

Dr. S. E. Gayman, Agra, will spend several months in New Orleans in postgraduate work.

Nowata will have a new hosptial if the plans of some of its progressive citizens materialize.

Dr. W. P. Fite, Muskogee, is in the New York Polyclinic where he will spend a year as interne.

Dr. Horace Reed, Oklahoma City, was operated for appendicitis in December. He is recovering nicely.

Dr. J. H. Harms, Cordell, and his wife were severely bruised when he drove his car into an open bridge.

Drs. D. Long, Duncan, **and J. P. Bartley,** Comanche, have formed a partnership for practice in the former place.

Dr. C. E. Damrel, of Tulsa, died December 17, in Enid. Dr. Damrel had been ill with heart disease for sometime.

Drs. J. E. Farber, Cordell, **and E. T. Robinson,** Cleveland, attended the Atlantic meeting of the Southern Association.

Dr. John A Martin, Shamrock, has given up his location and will spend some time in the East doing postgraduate work.

Dr. and Mrs. Roscoe Walker, Pawhuska, have returned from a visit to New York, where Dr. Walker attended the clinics.

Drs. D. Long, Duncan, and **J. P. Bartley,** Comanche, announced the formation of a partnership and will practice in Duncan.

Dr. L. T. Gooch, Lawton, has been appointed county physician, vice Dr. J. C. Johnstone, who has moved to another location.

Dr. R. L. Baker, Wynnewood, is the latest victim of the ubiquitous Ford, and as a result of the meeting is nursing a fractured arm.

Dr. E. G. Newell, Oklahoma City, narrowly escaped death in a car that turned turtle near the city. The driver was instantly killed.

Dr. J. W. Pollard, who left Bartlesville sometime ago for his health, writes from Ft. Lupton, Colorado, that he has greatly improved.

Dr. L. A. Milne, Lawton, who has been absent with the Medical Reserve Corps of the Army, has returned and will resume his practice.

Mrs. A. R. Lewis, wife of Dr. Lewis of Ryan, died in that city November 27th. Dr. Lewis has the sympathy of many friends in his grief.

Dr. H. S. Garland, Sapulpa, lost his very valuable Cole car recently. The thief drove the car away and no trace has been found of it since.

Dr. A. C. Hirshfield, Oklahoma City, attached to the Oklahoma Regiment, is confined to the Post Hospital, Brownsville, with a broken leg.

Dr. W. B. Tilton, Clinton, has been assigned physician to the Uintah and Ouray Indian reservation with headquarters at Ft. Duchesne, Utah.

Drs. R. M. Howard, W. M. Ferguson and A. D. Young, Oklahoma City, visited San Antonia in December, from that point taking a hunting trip.

Durant, suspicious of the water supply of the city on account of typhoid prevalence, has been assured of its purity by repeated bacteriological tests.

Dr. J. L. Austin, Durant, has been appointed city health officer, vice Dr. J. L. Kay, who has been assigned service with the Medical Reserve Corps.

Dr. D. D. McHenry, Oklahoma City, attended the meeting of the American Academy of Ophthalmology and Oto-laryngology at Memphis in December.

Okmulgee County Medical Society met in Henryetta for its annual meeting, December 12. The physicians were tendered a banquet at the Campbell Hotel.

Tuberculosis Sunday, December 10, was held at the Christian Church, Muskogee. The physicians on the program were Drs. Chas. W. Heitzman and C. A. Thompson.

Dr. J. G. Rafter, City Physicain, Muskogee, was severely injured December 8th, when his machine was struck by a street car. He suffered a fracture of the arm and many bruises.

Muskogee County Medical Society and the Muskogee Ministerial Association will hold a joint meeting soon for the purpose of effecting a permanent organization for the study of tuberculosis.

The legal profession of Pottawatomie County will be entertained by the Pottawatomie County Medical Society in the near future, reciprocating a banquet tendered the medics sometime ago by the lawyers.

Creek County Medical Society attacked a banquet at the Harvey House, December 13, the principal resistance being quail. It is said that at this meeting it was voted to increase the charges for professional services in Creek County.

Minnesota's compulsory regulation providing for the treatment of the eyes of all newborn babies with silver solution became effective in December. The regulation was vehemently opposed by that worthy body of pop-eyed neurotics known as Christian Scientists and others.

Dr. A. L. Blesh, Oklahoma City, was one of the guests of honor with Dean Lewis of Chicago of the Jackson County Medical Society, Kansas City, December 11th. Dr. Blesh delivered an address before the society and then attended a meeting of the Western Surgical Association at St. Paul, reading a paper before that body.

Dr. W. A. Fowler, Oklahoma City, announces to the profession, the opening of a modern, well equipped Lying-In Hospital at 914 West Thirteenth Street, Oklahoma City. Dr. Fowler for many years has given special attention to obstetrics and in this venture has gone to great expense to make his hospital thoroughly up-to-date. The institution will be open to the reputable members of the medical profession.

Tulsa County Medical Society held its annual meeting, Monday, December 17. The meeting was held at the Oklahoma Hospital. A banquet was tendered the visiting physicians. Among the physicians addressing the body were Drs. John W. Duke, State Commissioner of Health; LeRoy Long, Dean of the Medical Department of the University; De Zel Hawley, City Superintendent of Health, and Fred S. Clinton, President of the Oklahoma Hospital.

Pottowatomie County physicians were entertained by the Pottowatomie County Bar Association, December 15, a banquet being tendered the medics by the legal profession. The banquet was said to be irreproachable in its perfection, while the mental pabulum offered the guests was suggestive of the occupation of the two professions. For instance, "The way to tell the difference between a mushroom and a toadstool is: Try it—if you live, it is a mushroom: if you die it is a toadstool."

"There was a fool who framed his speech,
Even as you and I,
A hit, a peach, a scream, a screech,
But the toastmaster passed him by."

"Is it possible for a doctor to advertise as much as a lawyer?"
Physicians from all over the county attended the meeting.

CORRESPONDENCE AND MISCELLANEOUS

FROM THE OKLAHOMA STATE BOARD OF HEALTH, GUTHRIE, OKLAHOMA.
DR. JOHN W. DUKE, COMMISSIONER.

RURAL SANITATION

There is a widely prevalent belief that conditions in the rural districts including farms and small towns are more favorable to healthfulness than in the cities. This is a natural assumption, but the facts are that certain of the communicable diseases, such as typhoid fever, are more prevalent in rural communities because less attention generally is paid in the country districts to sanitation.

In cities, with their more dense population, it has been rendered imperative to provide pure water supplies, sewerage systems and proper disposal of garbage, which, together with a stronger public sentiment demanding enforcement of restrictive measures against the spread of contagion, has resulted in a much greater reduction in the rate of diseases dependent upon sanitation. In fact typhoid fever is now looked upon as much more of a rural and small town problem than one directly affecting the larger cities The inhabitants of the farms and villages of Oklahoma should understand that unsanitary outhouses, contaminated wells and filthy fly-breeding conditions are dangerous wherever they exist and should be abated. State and local health work should meet with a strong and favorable public sentiment. The State Board of Health and the officials and physicians who are aiding it in its work have only one object in view—the betterment of public health. It would be difficult, if not impossible, to name any object which is more for the benefit of the public or better deserves their unfaltering support.

WHOOPING COUGH AND MEASLES.

Not only are whooping cough and measles two of the most prevalent of children's diseases, but there is still a disposition on the part of far too many parents to regard them as comparatively trivial, in some cases almost necessary accompaniment of childhood. No greater mistake could be made. Each of these diseases every year takes a much heavier toll of young life in this state than diseases which arouse more apprehension, but are less common. It is depressing to consider the unnecessary, because, preventable, suffering and loss of child life. Physicians and health officers find these two diseases among the most difficult to control because of the yet too prevalent belief that they are so mild and devoid of danger to life that precautions are not necessary. Yet as a matter of fact whooping cough and measles each year claim more victims in Oklahoma and throughout the country generally than scarlet fever or diphtheria. Whooping cough especially is one of the most fatal diseases in infants under two years of age. Permanent physical impairments from complications frequently follow both whooping cough and measles.

The belief that all, or even a great percentage of children must necessarily contract whooping cough or measles is wholly ungrounded. They are contagious diseases and communicated only by contact with a person affected. Therefore if each case was promptly isolated until recovery, absolute control of the infection could be accomplished.

The diseases in question destroy many more lives in the United States than infantile paralysis, which created such alarm throughout the country, but it is the unusual which excites dread.

Measles begin with symptoms resembling a cold, such as running at the nose, fever and cough, which generally continue for several days before the rash appears. Whooping cough begins with an

apparently ordinary cough and the "whoop" usually does not appear for several days. It is in the early stages that both diseases are most contagious and children with the symptoms described should not be allowed to attend school or mingle with other children.

PREJUDICE VERSUS HEALTH.

One of the greatest obstacles to effective health work is the prejudice held in certain quarters against methods and measures which long since have been proven beneficial. Of course these prejudices are due to ignorance, for every human being desires health rather than illness. It is also true that many of these prejudices have vanished in recent years, that others are osing their force. Yet it still remains unfortunately true that health officers, physicians, sanitarians and others who are working for the public health too often find their efforts handicapp ed by popular beliefs which long since have been proven unfounded.

Nothing in medical science is more clearly established than that vaccination is the great preventive of smallpox. In former centuries smallpox was one of the scourges of the world. Its victims were to be found in every community, no matter how small. The death rate was enormous and many of those who escaped death were disfigured for life. Even in civilized communities its toll was huge, while among uncivilized peoples whole tribes were sometimes swept out of existence. Now the death rate from smallpox is extremely small and it will entirely disappear just as soon as vaccination becomes universal. Yet even today there are many persons who question the value of vaccination and an organized propoganda against it not only exists, but has no trouble in finding funds. There is an old proverb about leaving fools to the consequences of their own folly, but unfortunatley the person who refuses to be vaccinated not only risks his own health and life, but is a distinct menace to the entire community. The only remedy is for the state to exercise more thoroughly and drastically its unquestionable right to enforce restrictions which are for the protection of the community.

Many lives have been needlessly lost in Oklahoma, others unquestionably will be, simply because some parents are prejudiced against the use of diphtheria anti-toxin. There is absolutely no question as to the value of anti-toxin in diphtheria cases. Carefully kept statistics covering a large number of cases in New York state showed conclusively that the death and morbidity rates had been greatly decreased by the use of anti-toxin. It is true that it is a remedy which should be administered only by a competent physician, but that is true of most effective remedies. By the use of the Schick test it can be readily ascertained whether or not a person is liable to diphtheria. Diphtheria anti-toxin if used in time tremendously reduces the danger from the disease. When the public realizes the value of these remedies, diphtheria will cease to be the dreaded disease it is at present.

Typhoid annually takes a heavy toll of victims in this and other states. Yet protection against typhoid is an easy and simple matter. The experience of the United States army, even more the experience of the immense forces fighting in Europe proves this. In former wars the toll from typhoid has been heavier than that from bullets and shells. In this war although many of the conditions are unsanitary to a marked degree, typhoid is almost unknown. The only reason is that typhoid inoculation is insisted upon. It is a simple operation with very slight after results. It will for a long time render the person taking it immune from typhoid. Its general use would practically eliminate typhoid.

There are other diseases, the precautions against which are perfectly assured, but which continue their ravages simply because the public will not recognize these precautions. It is true that medical science is an exact science in the sense that mathematics; new factors and conditions are constantly arising. But where long series of experiments and tests have shown that certain remedies produce certain results, it is folly not to take advantage of these conclusions.

PARTIAL VACUUM METHOD

H. G. Beck, Baltimore (*Journal A. M. A.*, Dec. 2, 1916), after stating the disadvantages of the various appliances used in methods of diagnosis and treatment based on the principle of suction by rubber bulbs, or the various aspirating pumps and syringes, describes an apparatus for suction in the form of a simple inexpensive filter pump connected by means of heavy rubber tubing with an ordinary vacuum gage. It is provided with an adjustment for regulating the degree of vacuum. Any degree of constant suction as expressed in inches of mercutry can be obained, or by the use of a release valve or cut-off can be interrupted. The steady constant suction is used in aspirating stomach contents, pleural effusions, blood letting, etc., and the interrupted in Biers hyperemic cupping, breast pumping, etc. Methods of application for these purposes are described in detail. The suction principle has recently been adopted for keeping the field clean and dry in operative nose and throat work, as well as for draining infected sinuses. In general surgery it has also been employed for draining, especially in abdominal surgery. The article is illustrated.

THE WASSERMANN REACTION

J. T. King, Jr., Baltimaore (*Journal A. M. A.*, Dec. 2, 1916), reports some investigations in regard to the so-called provocative test for syphilis. He selected patients with known positive Wassermann reaction and in various stages and forms of syphilis of the central nervous system and aorta, tabes dorsalis and paresis. In some the test was done before the administration of salvarsan, and four, eitgheen, twenty-four and forty-eight hours after the injection. Most of the patients, however, were followed over five days, and some for several weeks. The details of making the test are given and the results tabulated. His conclusions as stated are: 1. In most cases little change occurs in the strength of the

Wassermann reaction during the first five days following the adminsitration of salvarsan. In this series of twenty treatments, only one case, in the primary stage, showed a marked weakening of the test. 2. Some previously untreated cases may be given prolonged salvarsan therapy with very little weakening of the Wassermann reaction. Such cases. however, show striking improvement symptomatically. 3. In this series only one insignificant temporary increase (provocative reaction) in the complement-binding substance could be demonstrated, following the administration of salvarsan. 4. It is improbable that, over short periods of time, there occurs any marked spontaneous fluctuation in the amount of complement-fixing substance in the blood of syphilitics. 5. Definite proof of the existence of the provocative Wassermann reaction following salvarsan is not at hand at the present time.

NEW AND NON-OFFICIAL REMEDIES

During November the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-official Remedies:

H. K. Mulford Company: Mercurialized Serum-Mulford, No. 5-A and 5-B. Mercurialized Serum-Mulford, No. 6-A and 6-B.

Swan-Myers Company: Swan's Bacillus Bulgaricus.

Swan's Bacillus Bulgaricus.—A pure culture in tubes of the *Bacillus bulgaricus*. It is designed for internal administration and for direct application to body cavities, abscesses and wounds. The culture is supplied in boxes of twelve tubes. The tubes must be kept in a cool place and must not be used after the date stamped on the package. Swan-Myers Company, Indianapolis, Ind. (*Journal A. M. A.*, Nov. 25, 1916, p. 1601).

PROPAGANDA FOR REFORM.

Patent Medicine Prosecutions Under the Food and Drugs Act.—The following information was brought out in connection with prosecutions by the federal authorities chiefly under that portion of the Food and Drugs Act which provides penalties against misleading, false and unwarranted therapeutic claims: Dr. Porter's Antiseptic Healing Oil was found to be essentially a solution of camphor and carbolic acid in cottonseed oil. It was claimed to be an excellent remedy for cuts, sores, old chronic ulcers, corns, bunions and a preventive of whooping cough, diphtheria and tuberculosis. Ballard's Horehound Syrup Compound was sold "For Consumption, Coughs and Colds" and other diseases. Dr. Shoop's Night Cure, was claimed promptly to cure ulceration, inflammation or congestion of the womb, leucorrhoea, painful ovaries and other female diseases. It was found to be a suppository containing zinc carbonate, zinc sulphate and boric acid in a cacao butter. Dr. Shoop's Cough Remedy was found to be a syrup containing ammonium benzote and probably white pine tar and gum. Dr. Shoop's Restorative was sold for the cure of all diseases of the stomach, liver and blood and still other diseases. Father John's Medicine was advertised as a consumption "cure". Dr. Shoop's Twenty Minute Croup Remedy was found to be a syrup containing glycerine and a small amount of salicylic acid. Bad-Em Salz was found to consist of sodium chloride, sodium sulphate, sodium bicarbonate, and a small amount of tartaric acid. It was sold with claims suggesting that it was derived from European springs and that it dissolved gallstones and gravel in the kidneys or bladder. Kennedy's Cal-Cura Solvent was a water-alcohol liquid containing 2.44 per cent. potassium acetate, 16.75 per cent. alcohol, 52.46 per cent. cane sugar and vegetable matter resembling mint, cardamom and boneset. From the claims which were made one would get the impression that there could be few ills that it would not cure. (*Journal A. M. A.*, Nov. 4, 1916, p. 1385-6).

Intravenous Therapy.—The technic, although not difficult, must be thoroughly mastered, or undue pain, infection, air embolism, or even death may result. Often a drug has an action different from that obtained by the usual method of administration. Deaths have resulted not only from a lack of proper technic, but also from a lack of knowledge of drugs so administered. Thus death has followed the injection of an iron preparation containing peptone, and also following intravenous injection of ether. Intravenous injections, while sometimes superior to the slower methods, are distinctly inferior when a continuous rather than a sudden action is desired as with iodids, nitrites, iron or salicylates. Intravenous injections should not be resorted to unless distinct advantages are to be secured as when immediate action is necessary in emergencies, where the drug is not otherwise absorbed or is destroyed in the stomach. In the light of our insufficient knowledge of the action of simple drugs when administered intravenously, the injection of complex mixtures of drugs is particularly reprehensible. (*Journal* A. M. A., Nov. 11, 1916, p. 1450).

What Ailed Him?—A druggist wants to know what ailed the patient for whom the following was prescribed: calomel 1 grain, potassium iodide 4 drachms, potassium bromide 3 drachms, potassium citrate 5 drachms, tincture of aconite 2 fluidrachms, wine of ipecac 1 fluidounce, chloroform water to make 3 fluidounces. Without venturing a guess regarding the patient's illness, it is suggested that if anything new was wrong with the patient after he took the medicine, the case may be diagnosed as one of misplaced confidence, either the physician's misplaced confidence in drugs or the patient's misplaced confidence in the physician. (*Journal A. M. A.*, Nov. 18, 1916, p. 1541).

Unna's Paste for Varicose Veins.—In the treatment of varicose ulcers of a mild form Dr. Ochsner prepared a boot composed of several layers of a bandage each treated with Unna's paste applied hot. The paste consists of gelatine 4 parts disolved in 10 parts hot water to which 10 parts glycerin and 4 parts zinc oxide are added. (*Journal A. M. A.*, Nov. 25, 1916, p. 1617).

Toilet Lotion.—Nothing is better to soften and whiten the skin than the official cold cream. For oily skins a tragacanth lotion is suitable. (*Journal A. M. A.*, Nov. 25, 1916, p. 1618).

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Choctaw		
Carter		
Cleveland		
Cherokee		
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Coal		
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Creek		
Dewey		
Ellis		
Garfield	W. L. Kendall, Enid	James H. Hays, Enid
Garvin		
Grady	E. E. Dawson, Chickasha	Martha Bledsoe, Chickasha
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Greer		
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Hughes		
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Jefferson		
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Latimer		
Le Flore		
Lincoln		
Logan		
Love		
Mayes		
Major		
Marshall		
McClain		
McCurtain		
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Noble		
Nowata		
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Oklahoma		
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Ottawa		
Osage		
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Roger Mills		
Seminole		
Sequoyah		
Stephens		
Texas		
Tulsa		
Tillman	A. J. Hays, Frederick	J. E. Arrington, Frederick
Wagoner		
Washita	D. W. Bennett, Sentinel	A. S. Neal, Cordell
Washington	W. E. Rammel, Bartlesville	J. G. Smith, Bartlesville
Woodward		
Woods	Isaac Hunt, Freedom	D. B. Ensor, Hopeton

OFFICERS OF OKLAHOMA STATE MEDICAL ASSOCIATION—ELECTION MAY 11, 1916.

Meeting Place—Lawton-Medicine Park, May 9, 10, 11, 1917.
President, 1916-17—Dr. Chas. R. Hume, Anadarko.
President-elect, 1917-18—Dr. W. Albert Cook, Tulsa.
1st Vice-President—Dr. Fowler Border, Mangum; 2nd Vice-President—Dr. A. R. Lewis, Ryan; 3rd Vice-President—Dr. Horace Reed, Oklahoma City.
Secretary-Treasurer-Editor—Dr. C. A. Thompson, Muskogee.
Delegates to American Medical Association—Dr. John Riley, Oklahoma City, 1917; Dr. M. A. Kelso, Enid, 1917-18.

COUNCILOR DISTRICTS.

1. Cimarron, Texas, Beaver, Harper, Ellis, Woods and Woodward; Councilor, Dr. J. M. Workman, Woodward. Term expires 1919.
2. Roger Mills, Beckham, Dewey, Custer, Washita and Woodward; Councilor, Dr. Ellis Lamb, Clinton.
3. Harmon, Greer, Jackson, Kiowa, Tillman, Comanche and Cotton; Councilor, Dr. G. P. Cherry, Mangum.
4. Major, Alfalfa, Grant, Garfield, Noble and Kay; Councilor, Dr. G. A. Boyle, Enid. Term expires 1919.
5. Kingfisher, Canadian, Oklahoma and Logan; Councilor, Dr. Fred Y. Cronk, Guthrie.
6. Caddo, Grady, McClain, Garvin, Stephens and Jefferson; Councilor, Dr. C. M. Maupin, Waurika. Term expires 1919.
7. Osage, Pawnee, Creek, Okfuskee, Okmulgee and Tulsa; Councilor, Dr. Walter E. Wright, Tulsa.
8. Payne, Lincoln, Cleveland, Pottawatomie and Seminole; Councilor, Dr. H. M. Williams, Wellston.
9. Pontotoc, Murray, Carter, Love, Marshall, Johnston and Coal; Councilor, Dr. J. T. Slover, Sulphur.
10. Washington, Nowata, Rogers, Craig, Ottawa, Mayes and Delaware: Councilor, Dr. R. L. Mitchell, Vinita.
11. Wagoner, Muskogee, McIntosh, Haskell, Cherokee and Adair; Councilor, Dr. P. P. Nesbitt, Muskogee.
12. Hughes, Pittsburg, Latimer, LeFlore and Sequoyah; Councilor, Dr. L. S. Willour, McAlester. Term expires 1919.
13. Atoka, Pushmataha, Bryan, Choctaw and McCurtain; Councilor, Dr. J. L. Austin, Durant.

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Surgery and Gynecology—Dr. McLain Rogers, Clinton.
Pediatrics and Obstetrics—Dr. L. W. Cotton, Enid.
Eye, Ear, Nose and Throat—Dr. A. W. Roth, Tulsa.
General Medicine, Nervous and Mental Diseases—Dr. A. K. West, Oklahoma City.
Genitourinary, Skin and Radiology—Dr. C. R. Day, Oklahoma City.
Legislative Committee—Dr. Millington Smith, Oklahoma City; Dr. J. M. Byrum, Shawnee; Dr. W. T. Salmon, Oklahoma City.
For the Study and Control of Cancer—Drs. LeRoy Long, Oklahoma City; Gayfree Ellison, Norman; D. A. Myers, Lawton.
For the Study and Control of Pellagra—Drs. J. Lewis Day, Norman, Chas. R. Hume, Anadarko; J. C. Watkins, Checotah.
For the Study of Venereal Diseases—Drs. Wm. J. Wallace, Oklahoma City; Ross Grosshart, Tulsa; J. E. Bercaw, Okmulgee.
Necrology—Drs. Martha Bledsoe, Chickasha; J. W. Pollard, Bartlesville.
Tuberculosis—Drs. L. J. Moorman, Oklahoma City; C. W. Heitzman, Muskogee; Leila E. Andrews, Oklahoma City.
Conservation of Vision—Drs. L. A. Newton, Guthrie; L. Haynes Buxton, Oklahoma City; G. E. Hartshorne, Shawnee.
Committee on First Aid—Drs. F. H. Clark, El Reno; Chas. Blickensderfer, Shawnee; Jas. C. Johnston, McAlester.
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Address all communications to the Secretary, Dr. R. V. Smith, Daniel bldg., Tulsa.

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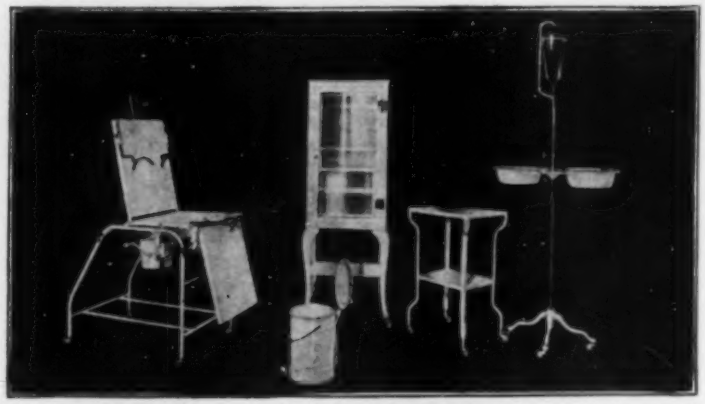

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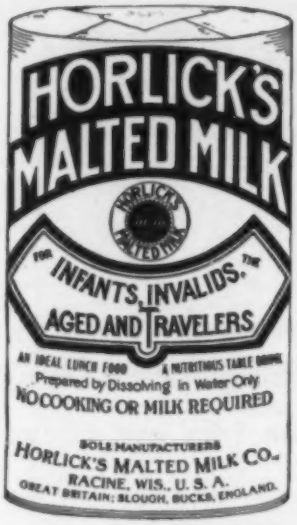
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